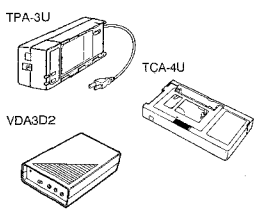
**SERVICE DATA**
**FILE NO. 030 - 261**

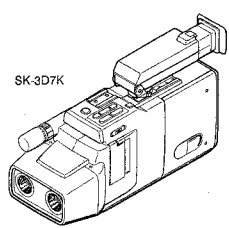
# TOSHIBA

VHS VIDEO MOVIE VHSC

# SK-3D7K

**TPA-3U** [AC power adapter]
**TCA-4U** [Cassette adapter]
**VDA3D2** [3D adapter]




## SPECIFICATIONS

**GENERAL**

| | | |
|---|---|---|
| Format | | : VHS standard |
| Power source | | : DC 9.6V |
| Power consumption | | : 9.5W |
| Signal system | | : NTSC-type |
| Recording system | | : Luminance: FM recording<br>: Color:<br>Converted sub-carrier direct recording<br>Conforms to VHS standard |
| Cassette | | : VHS-C cassette |
| Tape speed | (SP) | : 33.35mm/sec (1-5/16 ips) |
| | (EP) | : 11.12mm/sec (7/16 ips) |
| Recording time max. | (SP) | : 20 minutes (with TC-20 cassette) |
| | (EP) | : 60 minutes (with TC-20 cassette) |

**VIDEO**

| | |
|---|---|
| Output | : 1 Vp-p, 75 ohms, unbalanced (via AV IN/OUT connector) |
| S/N ratio | : 40 dB or more (SP), 38 dB or more (EP) |

**AUDIO**

| | |
|---|---|
| Output | : 346 mVrms, 16 to 32 ohms (via AV IN/OUT connector) |
| Microphone input | : –63 dBs, high impedance, unbalanced |
| Pick up | : 1/2"-format CCD |
| Minimum required illumination | : 15 lux (1.2 fc) (at f/1.6) |
| Lens | : f/1.6, f=9.5mm, lens with auto iris control |
| Viewfinder | : Electronic viewfinder with 0.6" black/white CRT |
| Color temperature switching | : Preset in three steps |
| White balance adjustment | : Full-auto/preset standard |
| Operating temperature | : 0°C to +40°C (32°F to 104°F) |
| Operating humidity | : Less than 80% |
| Storage temperature | : –20°C to 60°C (–4°F to 140°F) |
| Weight | : 1.4kg (2-7/8 lbs) (with viewfinder) |
| Dimensions | : 125(W)×156(H)×264(D)mm (4.9 × 6.1 × 10.4 inch) |

Design and specifications subject to change without notice.

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# SAFETY NOTICE

## SAFETY PRECAUTIONS

### LEAKAGE CURRENT CHECK

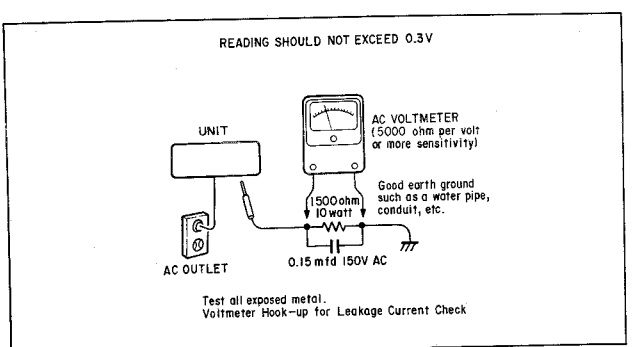
Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use an AC voltmeter, having 5000 ohms per volt or more sensitivity.

Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 mfd 150V AC capacitor between a known good earth ground (water pipe, conduit, etc.) and all exposed metal parts of cabinet (antennas, handle bracket, metal cabinet, screwheads, metal overlays, control shafts, etc.).

Measure the AC voltage across the 1500 ohm resistor. The test must be conducted with the AC switch on and then repeated with the AC switch off. The AC voltage indicated by the meter may not exceed 0.3 volts. A reading exceeding 0.3 volts indicates that a dangerous potential exists, the fault must be located and corrected.

Repeat the above test with the unit power plug reversed.

NEVER RETURN A UNIT TO THE CUSTOMER WITHOUT TAKING NECESSARY CORRECTIVE ACTION.




Test all exposed metal.
Voltmeter Hook-up for Leakage Current Check

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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## FEATURES

- **Amazingly real image can be easily recorded and played back.**
- **Pictures in the ordinary VHS mark cassette can be easily recorded and played back.**
- **Allows direct recording and playback with no additional components necessary.**
- **Ultra-compact and ultra-lightweight: a mere 1.4kg.**
- **Maximum of 60 minutes recording time in EP mode.**
- **HQ (High Quality) System for super picture quality.**
- **Super-performance camera using a CCD (Charge Coupled Device) pickup highly resistant to shock and vibrations less susceptible to burn for semi-permanent, trouble-free operation.**
- **Full-auto camera operation (auto-tracking white balance, auto iris with BLC).**
- **Ultra-compact adjustable electronic viewfinder (monochrome CRT, 0.6-inch screen) with diopter control, also for instant on-the-spot playback.**
- **High-sensitivity/low-lag design: allow shooting in light as low as 15 lux (1.5fc)**
- **Three-way power supply flexibility: battery pack, AC power adapter and car battery.**
- **Selectable rec review function.**
- **One-button recording standby mechanism.**
- **Improved assemble-edit accuracy.**
- **Picture search in both directions.**
- **Ergonomic design with palm grip and finger rest for trigger control.**
- **1/1000 shutter to shoot a quickly moving subject.**
- **Character generator for superimposing title and date on the recording scene and recorded Picture.**
- **Self-timer: allows all members of family together in the same picture.**
- **BGM jack for mixing music with sound through microphone.**

The SK-3D7 is designed to be used with NTSC-type color television signals. It cannot be used for playback with a television of a different standard. However, live recording and viewfinder playback are possible anywhere. Use the TBF-9U battery packs and, to recharge them, the provided multivoltage AC power adapter/battery charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)



## PRECAUTIONS

**For safety, strictly observe the following instructions.**

- Do not open the cabinet.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.

**Avoid using the unit under the following conditions:**

- Places subject to excessive humidity or dust.
- Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- Places subject to soot or steam such as near a cooking stove.
- Places subject to excessive shock or vibration.
- Near a television set (rolling pictures or howling might result).
- Extremely hot places.

**Do not expose the unit to high temperatures over 40°C (104°F) for long periods.**

If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:

- Do not leave the unit in places of over 36°C (85°F).
- Do not use the unit in places of over 40°C (104°F).
- Do not use the unit in places of below 0°C (32°F).
- Do not use the unit in humid places of over 80%.
- For long storage, select a place between −20°C (−4°F) and 30°C (86°F).

**Take special care for protection of the unit.**

- Do not allow the unit to become wet.
- Do not leave the unit in closed cars on hot summer days.
- Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

**Make it a rule to observe the following instructions.**

- Do not remove the battery pack or disconnect other power supply units during recording or playback before pressing the POWER switch to OFF. If not observed, this will cause tape damage.
- When the unit is not in use, remove the battery pack.

**Keep the lens and viewfinder eyepiece always clean.**

- When the lens is dirty or dusty, blow it off first and then gently wipe with a soft brush or lens cleaning paper.
- The lens is likely to become modify if left dirty.

**Be careful not to damage the CCD.**

- Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit.
- Do not direct the eyepiece of the viewfinder at the sun.

**Handle the unit carefully.**

- Protect the microphone from excessive shocks.
- Do not carry the unit by holding it only by the viewfinder.

**Moisture condensation disenables use of the unit.**

- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. The same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a warm place to a cool place, after heating a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
- If moisture condensation occurs on the head drum, a condensation warning appears in the viewfinder display and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

**Maintenance**

- When the cabinet is dusty, clean by gently wiping with a soft cloth.
- Avoid the use of strong cleaning agents such as benzine or alcohol as they may damage the cabinet.
- Cleaning should be done only after the battery pack has been removes or other power units have been disconnected.

**Caution for Installing lithium battery**

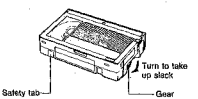
- Before installing lithium battery, connect the unit with power supply source (battery pack, AC power adapter etc.) and turn the power on.



# SECTION 1
# GENERAL DESCRIPTION
## OPERATING INSTRUCTIONS

## VIDEO CASSETTES

- The SK-3D7 employs only compact video cassettes carrying the Mini mark.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slackened. If there is any slack, turn the gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.



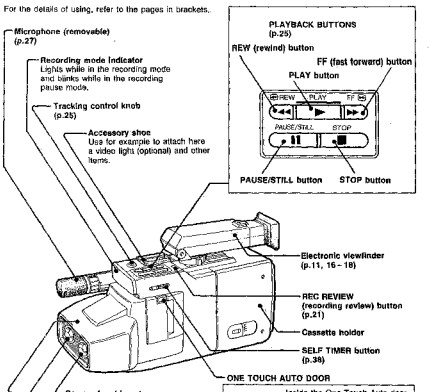

**Storage of cassettes**

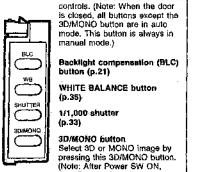
- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.



## CONTROLS AND CONNECTORS

For the details of using, refer to the pages in brackets.



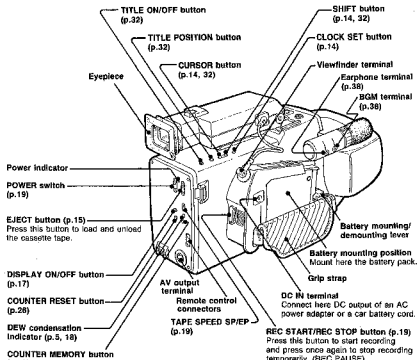

Inside the One Touch Auto door there are four buttons for manual controls. (Note: When the door is closed, all buttons except the 3D/MONO button are in auto mode. This button is always in manual mode.)

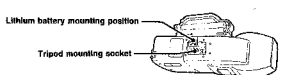
**Backlight compensation (BLC) button (p.21)**

**WHITE BALANCE button (p.35)**

**1/1,000 shutter (p.33)**

**3D/MONO button**
Select 3D or MONO image by pressing this 3D/MONO button. (Note: After Power SW ON, the 3D mode is set).

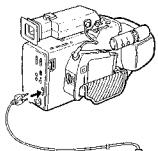

TITLE ON/OFF button (p.32)
TITLE POSITION button (p.32)
CURSOR button (p.14, 32)
Eyepiece
SHIFT button (p.14, 32)
CLOCK SET button (p.14)
Viewfinder terminal
Earphone terminal (p.38)
BGM terminal (p.38)
Power indicator
POWER switch (p.19)
EJECT button (p.15)
Press this button to load and unload the cassette tape.
Battery mounting/ demounting lever
Battery mounting position
Mount here the battery pack.
Grip strap
DISPLAY ON/OFF button (p.17)
COUNTER RESET button (p.28)
DEW condensation indicator (p.5, 18)
COUNTER MEMORY button (p.26)
AV output terminal
Remote control connectors
TAPE SPEED SP/EP (p.19)
DC IN terminal
Connect here DC output of an AC power adaptor or a car battery cord.
REC START/REC STOP button (p.19)
Press this button to start recording and press once again to stop recording temporarily. (REC PAUSE)



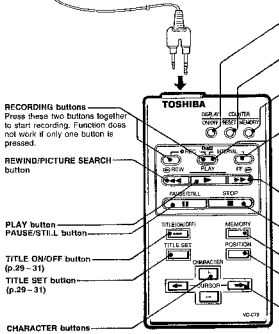



## REMOTE CONTROL UNIT

Connect the Remote Control Unit with SK-3D7 using the supplied connecting cable.



Note:
Make certain that the plug of the connecting cable is completely inserted into the connectors of the remote control unit.
Insufficient plugging-in may cause malfunction of the remote control unit.




**DISPLAY ON/OFF button**
Functions as same as the button on the unit. (p.17)

**COUNTER RESET button**
Functions as same as the button on the unit.

**COUNTER MEMORY button**
Function as same as the button on the unit.

**RECORDING buttons**
Press these two buttons together to start recording. Function does not work if only one button is pressed.

**INTERVAL RECORDING buttons**
Press these two buttons together to set the unit to the interval recording mode. To release the mode press the buttons again. Pressing only one button does not activate the function. (p.37)

**REWIND/PICTURE SEARCH button**

**FF/PICTURE SEARCH button**
Functions as same as the button on the unit.

**PLAY button**
**PAUSE/STILL button**

**STOP button**

**TITLE ON/OFF button (p.29 – 31)**

**MEMORY button (p.29 – 31)**

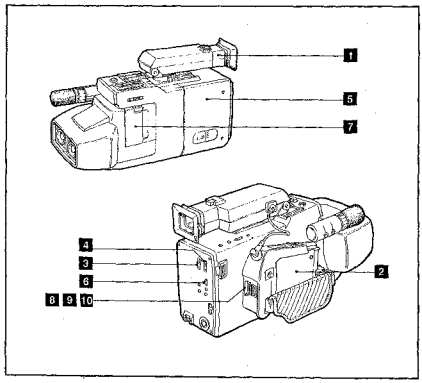
**TITLE SET button (p.29 – 31)**

**TITLE POSITION button (p.29 – 31)**

**CURSOR buttons (p.29 – 31)**

**CHARACTER buttons (p.29, 30)**

## LIVE RECORDING HAS NEVER BEEN SO EASY




**Full-auto outdoor recording procedure**

1. Mount the viewfinder.
2. Attach the battery pack.
3. Press the POWER switch to ON.
4. Two seconds later, press the EJECT button.
5. Load a cassette.
6. Set tape speed to SP or EP.
7. After opening the One Touch Auto door, press the 3D/MONO button to select the recording mode between 3D and MONO.
8. Press the REC START/REC STOP button.
9. Press the REC START/REC STOP button again. (Shoot)
10. Press the REC START/REC STOP button once again. (Stop recording in the stand-by mode).

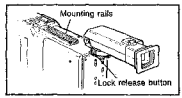


## ELECTRONIC VIEWFINDER MOUNTING

### Mounting the Viewfinder

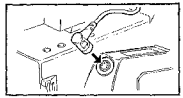
Turn the power switch OFF before mounting or removing viewfinder.
Mounting the view finder

**1**



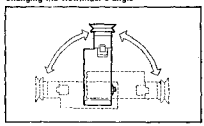

Slide the viewfinder along the mounting rails while pressing the lock release button. When the viewfinder reaches the end of the rails, release the button and adjust position until the viewfinder will click into place.

**2**



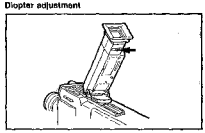
Connect the viewfinder cable to the viewfinder terminal.

**Changing the viewfinder's angle**



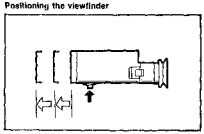
The viewfinder's angle can be changed for best visibility. It can be rotated 360° and tilted up 90°, making almost any viewing angle possible.

**Diopter adjustment**



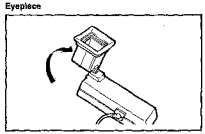
The viewfinder lens can be adjusted to suit the operator's eyesight by sliding the diopter adjustment lever.

**Positioning the viewfinder**



Three fixing positions are available. Slide the viewfinder along the rails, pressing the lock release button and select the best position for viewing.

**Eyepiece**



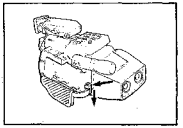
Open the eyepiece as illustrated if you look into the viewfinder at a distance.

## POWER SUPPLY SYSTEM

The convenient 3-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

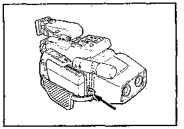
**Attaching the Battery Pack**

**1**



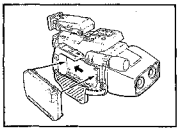
Pull down the battery pack lock lever.

**3**



Push up on the battery pack lock lever, until it locks into place.

**2**

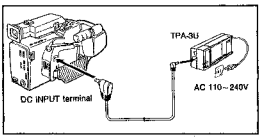


Align the battery pack over the outline in the battery pack mount, and slide the battery pack into place in the direction of the arrow.

**4** To remove the battery pack, pull down the battery pack lock lever and slide out the battery.

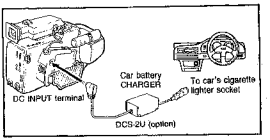
**Note:**
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, be sure to charge it. See Page 39, 40.
No function is available without power supply.

**With AC power**
Use the provided TPA-3U AC power adapter/battery charger.



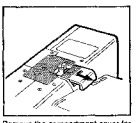

**In a car**
Use the optional DCS-2U Toshiba car battery CHARGER.

**Notes:**
- Use only the car battery of 12V.
- Use only the car battery of negative grounding. Connection with the car battery of positive grounding causes damage to the unit.

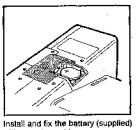



## INSTALLING LITHIUM BATTERY

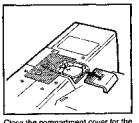
Lithium battery is used as power source of the built-in clock and the memory circuit of tiling.
Before installing the lithium battery, attach the battery pack or connect AC power adapter with SK-3D7 and turn the power switch on.
Make certain that the power indication is lighting and then install the lithium battery.



Remove the compartment cover for the lithium battery in the direction of the arrow.



Install and fix the battery (supplied) with + pole upside.



Close the compartment cover for the lithium battery in the direction of the arrow.

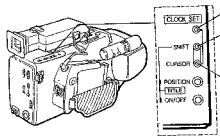
### Battery Replacement

- In normal use, the estimated battery life is approximately one year.
- When the battery fails to wearing out, the display "TIMER BATT" blinks in the viewfinder. Replace the battery with new "CR2025" type of TOSHIBA. NEVER use another type of battery. See the warning below.
- Confirm the correct polarities before installing.
- Dispose of the used battery promptly.
- Do not disassemble and do not dispose of the battery in fire.
- Keep the battery out of reach of children.

**WARNING:** The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate.
Replace battery with "CR2025" of TOSHIBA only. Use of another battery may present a risk of fire or explosion.

## SETTING TIME AND DATE

With this date and time setting function, SK-9D7 allows you to superimpose recording date and time on your pictures.




**CLOCK SET button**

**SHIFT button**
Press this button to change numbers. If the button is kept pressed, number changes continuously.

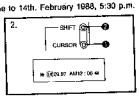
**CURSOR button**
Press this button and the cursor moves to right. Move and place the cursor on the number or the character to be corrected and then correct the number as desired pressing SHIFT button.
Time setting is displayed in the viewfinder as follows.

Day: From 0 to 3 for two digits figure and 0 to 9 for one digit figure.
Month: From 01 to 12.
Year: 87 for 1987, 00 for 2000.

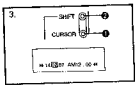
Time: PM 12 for midday and AM 12 for midnight.

**Example:** To adjust the date and time to 14th. February 1988, 5:30 p.m.

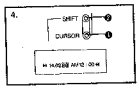
Press the CLOCK SET button. Characters are indicated as shown above and arrowheads blink.



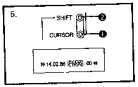

Adjust the day.
Press the CURSOR button. The characters stop blinking while the cursor starts blinking. Move the cursor and place it on the character to be corrected. Make the number correction pressing SHIFT button.



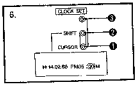

Adjust the month.
Move the cursor and correct the month.




Adjust the year.
Move the cursor and correct the year.




Adjust the hours.
Move the cursor and adjust the hours.




Adjust the minutes.
Move the cursor and correct the minutes. At the moment the corrected time and the real time become same, press the CLOCK SET button. The clock starts and indications disappear.

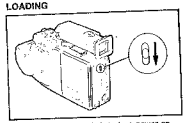
No time adjustment is required as long as the lithium battery is installed.

**Caution:** "TIMER BATT" appears in the viewfinder if the CLOCK SET button is pressed when no battery is installed or when the battery capacity is coming short.

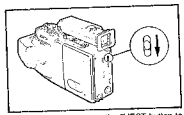


## LOADING AND UNLOADING A VIDEO CASSETTE

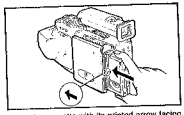
### LOADING



Press the POWER switch to turn power on.

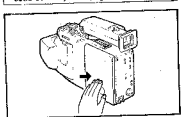


Two seconds later, press the EJECT button to open the cassette holder.



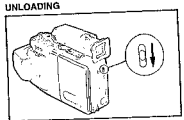
Insert the cassette with its printed arrow facing outward.

First remove tape slack, then insert the cassette correctly. See page 8.

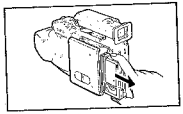


Close the cassette holder by pushing its lower area.

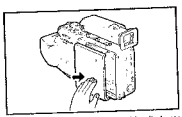
### UNLOADING



Make sure the unit is in the Stop mode. Press the EJECT button. The cassette holder will open.



Remove the cassette.

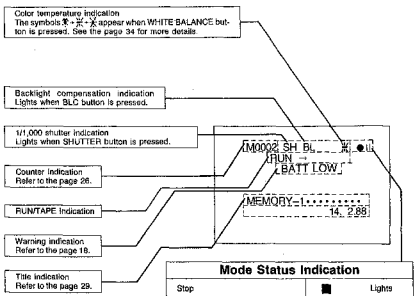


Close the cassette holder by pushing its lower area.
- When not in use, turn the power off.

**Notes:**
- Do not repeat loading and unloading of the cassette without running the tape, as this will slacken the tape, causing tape damage.
- When the battery is discharged, the tape is unloaded and the power turns off. However, pressing the POWER switch while holding the EJECT button pressed, turns the power on and ejects the cassette.

## VIEWFINDER INDICATION

The viewfinder of SK-3D7 provides comprehensive on-screen indications. The same signals can be obtained through AV output terminals of SK-3D7.



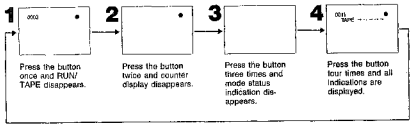

### Mode Status Indication

| | | |
|---|---|---|
| Stop | ■ | Lights |
| Pause (Rec) | ● II | Blinks |
| Recording | ● | Lights |
| Recording review | ↺ ● | Lights |
| Play | ▶ | Lights |
| Fast Forward/Picture Search | ▶▶ | Lights |
| Reverse/Picture Search | ◀◀ | Lights |
| Pause/Still Picture | II ▶ | Lights |
| Fast Forward | ▶▶ | Lights |
| Rewind | ◀◀ | Lights |
| Unloading cassette | ⏏ | Light |
| Loading cassette | TAPE | Blinks |



## DISPLAY ON/OFF Button

Indications can be turned off by pressing DISPLAY ON/OFF button.


1
2
3
4
Press the button once and RUN/ TAPE disappears.
Press the button twice and counter display disappears.
Press the button three times and mode status indication disappears.
Press the button four times and all indications are displayed.

## RUN/TAPE Indication

RUN is indicated at the beginning of recording or playing back, and when the remaining time of the tape is detected, the indication changes to display TAPE.

| FUNCTION | | DISPLAY READOUT | | NOTE |
|---|---|---|---|---|
| FF ( ▶▶ ) MODE | EP SP | RUN | →→→→→→→ | Arrows appear repeatedly and run in the direction as shown. |
| REW ( ◀◀ ) MODE | EP SP | RUN | ←←←←←←← | Arrows appear repeatedly and run in the direction as shown. |
| FF/Picture Search | EP SP | TAPE | →→→→→→→ | Arrows run in the direction as shown. |
| REW/Picture Search | EP SP | TAPE | ←←←←←←← | Arrows run in the direction as shown. |
| PLAY and REC | EP | TAPE | →→→→→→→ | See note 1 and 2 below. |
| PLAY and REC | SP | TAPE | →→→→ | See note 1 and 2 below. |
| STOP PAUSE/STILL REC PAUSE | EP | TAPE | – – – – – – – | |
| STOP PAUSE/STILL REC PAUSE | SP | TAPE | – – – – | |

**Notes:**

1. Arrows appear as shown above when the remaining time of tape is still long enough.
2. When the remaining time of tape becomes short, the number of the arrows decreases.
   Example in SP mode:
   - →→→→ Remaining time is about 20 min.
   - →→→ Remaining time is about 15 min.
   - →→ Remaining time is about 10 min.
   - → Remaining time is about 5 min.
3. In the beginning of recording and playback in the SP mode, five arrows appear at first and one of them disappears about 30 seconds later, remaining four. This is not the defect of the unit.
4. The last arrow starts blinking when the remaining time comes to be less than 3 minutes.

## Warning Indications

When there are more than two warnings to be indicated, they appear by turns.

| | |
|---|---|
| —BATT LOW— | When battery power becomes insufficient, "BATT LOW" appears and blinks. Power turns off automatically one minute after the warning. Change the battery. If the battery is kept used in spite of the warning, "BATT DOWN" appears and power turns off again. |
| BATT–DOWN | |
| —DEW— | Blinking "DEW" is warning you that moisture condensation has occurred inside the recorder unit. (Refer to the page 6.) |
| —REC–INH— | Blinking "REC-INH" (recording inhibited) is warning you that no tape or a tape with the removed safety tab is loaded. |
| PW–OFF | When the power switch is turned off during recording pause mode, "PW-OFF" lights and then power turns off.<br>**Note:** No display appears while in stop mode. |
| —TIMER BATT— 1 4.12.95 PHOL 12 H | "TIMER BATT" appears and blinks if lithium-battery is not installed when setting the time. It also blinks when battery capacity becomes low. Change battery at earlier occasion. |
| 0774 TAPE–END | "TAPE-END" lights when the tape comes to an end and the recorder is set in pause mode. When the power is being supplied from other than battery, the tape will be rewound. |
| —TROUBLE !!— | Blinking "TROUBLE" is warning you that something is going wrong with mechanism. Turn the power off and consult TOSHIBA dealer. |

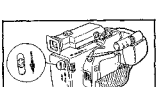


# RECORDING OPERATIONS (3D RECORDING and MONO REC)

3D and MONO image can be easily recorded by following the steps below.

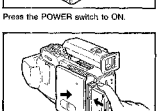
Note: When recording objects in a far distance, the 3D effect will be applied slightly.

**1**



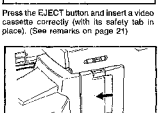
Press the POWER switch to ON.

**2**



Press the EJECT button and insert a video cassette correctly (with its safety tab in place). (See remarks on page 21)

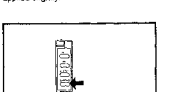
**3**



Open the One Touch Auto door.

### SP Mode and EP Mode

- Recording time is 20 minutes in SP mode and 60 minutes in EP mode.
- In EP mode picture and sound qualities are slightly inferior to recording in SP mode.
- SP mode and EP mode are indicated in the viewfinder. Also refer to the page 17.



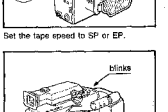
Press 3D/MONO button
- When the image inside the Viewfinder is jittering the mode is set to 3D.
- When the image inside the Viewfinder is steady, the mode is set to MONO.

**4** Close the door.

**5**

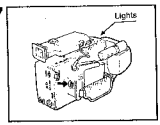
Set the tape speed to SP or EP.

**6**

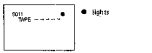



Press REC START/REC STOP button and the unit is set in recording stand-by mode.

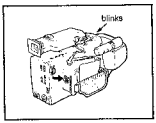
**7**




To start recording, press REC START/REC STOP button again.




**8**

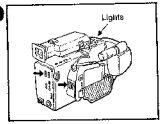



To stop recording temporarily, press the REC START/REC STOP button once again.

**9** To restart recording, press the REC START/REC STOP button.

- For a pause longer than 5 minutes, press the POWER switch to OFF.
- If the Recording Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically. To restart recording, turn the power on. This makes clean assembled recordings possible even after a long pause.

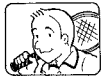
**10**




To end recording, press REC START/REC STOP button.

- After making sure that the tape has stopped, press the POWER switch to OFF.

## Viewfinder Monitoring



- Rewind the tape to a point from which you want to check the recording.
- Press the PLAY button, and you can view the playback picture on the viewfinder screen.

**Notes:**

- Pressing the PAUSE/STILL button during playback stops the picture on the viewfinder screen.
- Picture search is also possible in both directions.

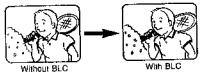
## Monitoring Sound

Connect an earphone to the earphone connector and you can monitor recording sound while recording a tape and recorded sound while playing back a tape on the viewfinder screen.

## Backlight Compensation

- Open the One Touch Auto door and press the BLC button. To release the function, press the button again or close the door.

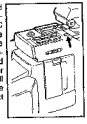
When excessive lighting is located in the back of the subject, or in shooting a blackish subject in front of a white back scene, correct exposure may not be obtainable. To compensate for this, use BLC (backlight compensation) button.



Without BLC | With BLC

## Rec Review Function

- If you want to review the end of the last recording for confirmation, press the REC REVIEW button from the Record Pause mode; the tape will be rewound for about 2 seconds of program time and played back automatically for this section, after which it will stop in the Record-Pause mode in standby for the next shot.



**Notes:**

- The TRACKING control should be at its center position.
- Distortion might occur when playback starts. This is normal.

## Assemble Recordings

- Repeating steps 9 and 10 produces assemble recordings. In playback, the picture may be slightly distorted at the point between separate takes. This is not due to any defect of the unit.
- If recording is restarted from the Stop mode, a few frames of the previously recorded picture are placed with a new recording. To avoid this, follow the technique described in "Assemble Recording Technique-2" on page 22.

**→ Remarks**

Before using a tape check if there is any tape slack. If observed any slack, turn the gear in the direction of the arrow (see the illustration below.) to take it up. Never turn the gear to the opposite direction as it causes damage to the tape.

When tape slack is taken out, this reel begins to turn as you turn the gear below.

Turn this gear to take up slack.

## POWER SAVE

Even when the unit is not in the recording mode, (such as in the STOP mode or in the REC PAUSE mode) almost the same quantity of electric energy is consumed as in recording, if the power is kept turned on. SK-70 is equipped with power saving function to save the battery power, when battery operated, which switches itself off automatically as shown at right.

**Battery operation**

STOP → POWER SAVE → POWER OFF

5 minutes 5 minutes

**Battery operation**

REC PAUSE → POWER SAVE → POWER OFF

5 minutes 5 minutes

## ASSEMBLE RECORDING TECHNIQUE — 1 (To replace the battery pack during recording)

**1** If the battery warning appears in the viewfinder or the counter display while recording, stop recording by pressing the POWER switch to OFF, not the STOP button.

**2** Replace the battery pack with a charged one.

**3** Press the POWER switch to ON.
• The unit will be in the Recording Stand-by mode.

**4** Press REC START/REC STOP button to start recording.

## ASSEMBLE RECORDING TECHNIQUE — 2 (To record onto a partially recorded tape)

**1** Play back the tape to a point where you wish a new recording to start.
• Use the PICTURE SEARCH button for faster location.

**2** Press the PAUSE/STILL button at the located point.
• The unit will enter the Still mode.

**3** Press REC START/REC STOP button.
• The unit will enter the Recording Stand-by mode.

**4** Press REC START/REC STOP button again to start recording.

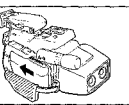


## CONNECTION AND PLAYBACK (3D and MONO)

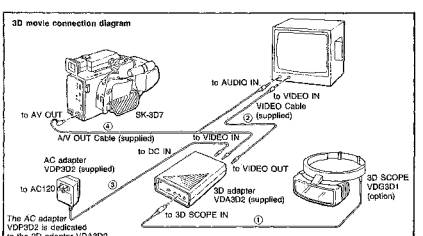
The SK-3D7 permits playback of recorded VHS-C video cassettes.
Connect and operate as follows to play back 3D or MONO (monaural) image pre-recorded by SK-3D7 onto a C-video cassette.
The 3D/MONO image on the C-video cassette is automatically recognized and displayed on TV screen.

**Preparation**
• The SK-3D7 includes playback circuits and allows playback of pre-recorded cassettes simply by connecting to a television set as follows.

Connect a power supply unit.
(Battery or AC operation: see page 12.)

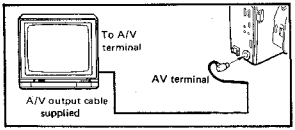


**Connection to see 3D or MONO image when using a TV with A/V terminals.**




① Connect the cable of the 3D Scope VDG3D1 to the 3D SCOPE terminal of the 3D Adapter VDA3D2.
② Connect the VIDEO IN terminal of the television to the VIDEO OUT terminal of the 3D Adapter.
③ Connect the cable of the AC Adapter VDP3D2 to the DC IN terminal of the 3D Adapter.
④ Connect the AV out terminal of the SK-3D7 to the AUDIO IN terminal of the television and the VIDEO IN terminal of the 3D Adapter.

## Connection to see MONO image only




- Simply connect the AV connector of the SK-3D7 to the VIDEO and AUDIO IN connectors of the television using the provided A/V output cable.

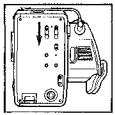


# PLAYBACK (3D and MONO)

**1**

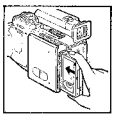
- TV Power SW ON.
- Press 3D Adapter Power SW ON.

**2**



Press the POWER switch to ON.

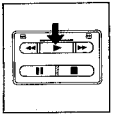
**3**



Insert a pre-recorded cassette.

First remove tape slack, then insert the cassette correctly. See page 6.

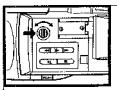
**4**



Press the PLAY button. Playback will start.

- For 3D image, see it with 3 DIMENSION SCOPE (VDG 3D1).
- Select 3D image by switching A◀▶B SW on the 3D Adapter VDA3D2. Usually, set to "B" position. Refer to the instructions found on the bottom of the 3D Adapter.

**Note:**
The 3D image looks jittered to the naked eye.



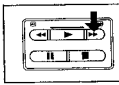
**Tracking adjustment**
If noise bars appear on the screen, adjust the TRACKING control. Turn it slowly in either direction to minimize noise bars. After playing a particular tape, return the TRACKING control to the center position.

**Notes**

- The SP/EP switch may be in either position. The SP or EP mode recording is automatically detected and played back at a correct speed respectively.
- When the end of the tape is reached during playback, the Rewind mode engages automatically.

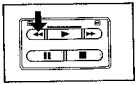
## Picture Search

Fast-speed playback in the forward direction



Press the FF button in the Play mode. Playback will be speeded up to 3 times normal speed in SP mode, 7 times normal speed in EP mode, as long as the button is being pressed.

Fast-speed reverse playback

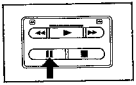


Press the REW button in the Play mode. The tape will be played back in the reverse direction at 3 times normal speed in SP mode, 7 times normal speed in EP mode, as long as the button is being pressed.

**Notes:**

- Noise may appear on the screen during Picture Search and still playback. This is not due to any defect of the unit.
- Pictures may become monochrome during Picture Search in the SP mode. This is not due to any defect of the unit.

## Still playback



Press the PAUSE/STILL button during playback. The picture will stop on the screen.

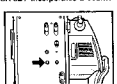
**Notes:**

- After about 5 minutes of still playback, the unit enters the PLAY mode automatically.
- Press either the PAUSE/STILL button or the PLAY button to disengage the still mode.

## Counter Memory Function

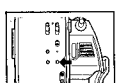
The SK-3D7 incorporates a counter memory mechanism which facilitates locating a specific tape segment.

**1**



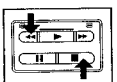
Press the COUNTER RESET button to reset the counter to "0000".

**2**



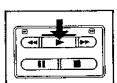
Press the COUNTER MEMORY button.
The "M" mark will appear.

**3**



After recording or playback, press the STOP button, then the REW button. The tape will automatically stop at the counter reading of around "9990".

**4**



Press the PLAY button to start playback. (It takes 20 seconds until the stabilization of picture.)

**Notes:**

- The counter memory function is effective in the Fast Forward mode as well.
- To cancel the memory function, press the COUNTER MEMORY button.
- When the power supply unit is disconnected, all indications on the counter display disappear and the counter memory function is cancelled after about 30 seconds.

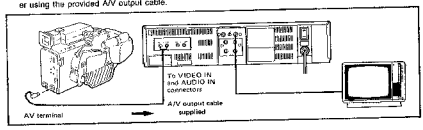


# TAPE DUBBING OR EDITING

## Dubbing onto a second recorder

**Connection**

1. Connect the AV connector of the SK-3D7 to the AUDIO and VIDEO IN connectors of the video recorder using the provided A/V output cable.
2. Connect a television to the video recorder to monitor the picture while dubbing.




**Operation**

Put the SK-3D7 in the Play mode and the connected recorder in the Record mode to copy the recording. To edit out unwanted material, press the recorder's PAUSE button.

**Note**

It is recommended to dub in monaural (MONO).

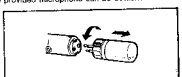
**CAUTION**

The unauthorized recording of television programs, video tapes and other materials may infringe the provisions of the copyright laws.

# EXTERNAL MICROPHONE

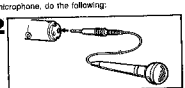
The provided microphone can be detached. To use another microphone, do the following:

**1**



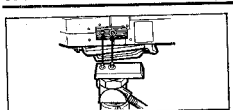
Remove the provided microphone by turning it in the direction of arrow and then pulling it straight out.

**2**



Plug the external microphone's cord into the microphone jack.

# TRIPOD MOUNTING



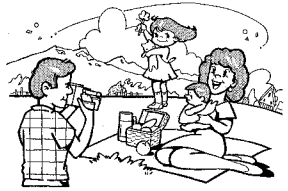
Align the screw and camera direction stud of the tripod with the camera's tripod mounting socket and stud hole, and firmly tighten the screw.

# MAKING THE MOST OF THE PROVIDED FEATURES

Shooting with SK-3D7 is not a mere shooting. Its provided features allow you to record pictures in various ways with various techniques. Read the following pages to make your tape production more fun and more personal.


**Enjoy your tape production with:**

**Composing titles to superimpose on your pictures** ..... **31**
**Shooting very fast moving subject with 1/1,000 shutter** ..... **33**
**White balance adjustment** ..... **34**
**Interval recording** ..... **37**
**Self-timer** ..... **38**
**Mixing music** ..... **38**



# COMPOSING AND RECORDING TITLES

Character generating function of SK-3D7 allows you to compose titles and superimpose them on your recording pictures. Use the wired remote control unit to compose creative titles and give more personality to your tape production.

**TITLE ON/OFF button**
Press this button to compose and/or record titles. MEMORY-1 and the date are displayed when you operate this function for the first time after purchase. If you set the title even once, the characters which have been changed by you will be displayed in the following time.

**TITLE SET button**
Use this button to compose or correct a title. When pressed, cursor appears blinking and when pressed again, cursor disappears.

**CURSOR button**
Press the button to move cursor to the place to be corrected. By pressing the button, cursor moves to left and to right.

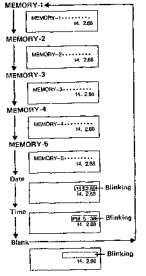
**CHARACTER button**
Character marked by blinking cursor changes when this button is pressed.
Available characters
Alphabet from A to Z; Numbers from 0 to 9; 11 Punctuation marks and space.

Press ▲ to move to the direction of arrow for the selection and press ▼ to move to the reverse direction of arrow.

**Note:**
Two titles are displayed on the upper line and the lower line and 20 characters are allowed for each line. Five titles can be stored. To have the other three titles displayed, use the MEMORY, TITLE SET and CURSOR button.

**MEMORY button**
Press this button on the place where cursor is blinking. Indication contents will be changed.

Every pressing of the button changes indication as follows.




No display appears with Blank.

**TITLE POSITIONING button**
Press this button to move title position. Each pressing moves the position to one line upper and with fifth pressing the position returns to the original place.

## Composing and storing titles.

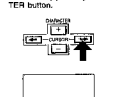
EX: Compose the title "TOSHIBA VIDEO MOVIE" and store it into MEMORY-1, using the supplied remote control unit.

1. Press TITLE ON/OFF button. MEMORY-1 is displayed.

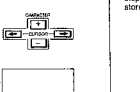
2. Press TITLE SET button Cursor appears and M blinks.

3. Press CHARACTER select button. Press + and correct M to T.

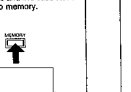
4. Move the cursor to E pressing CURSOR button and change the letter to O by pressing CHARACTER button.



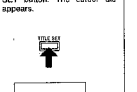

5. Repeat steps 3 and 4.




6. When composition is finished, press MEMORY button. Display changes to MEMORY 2. Repeat steps 3 to 5 and five titles can be stored into memory.




7. When composing and storing titles are completed, press TITLE SET button. The cursor disappears.

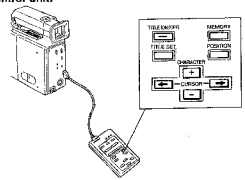



8. Press TITLE ON/OFF button. All display disappears.

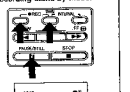
**Note:**
Connection with TV monitor is recommended when composing titles. When the viewfinder is connected and the power is on, characters appear for an instant on the pictures in the viewfinder and on the TV screen. This is not any defect of this unit. Since no clearing key for correction or modification is provided, use the character button for direct overwriting or "Space" for erasing.



## Superimposing the title on recording picture by using buttons on the remote control unit.



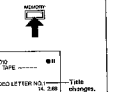

1. Press REC buttons and PAUSE/STILL button to set the unit to recording stand-by mode.




2. Press TITLE ON/OFF button. Title and date are displayed.

3. To change the title to another one, press TITLE SET button. The upper cursor blinks.

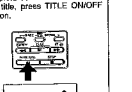
4. Press MEMORY button to select the title to be recorded.



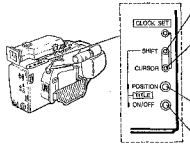

5. Press CURSOR button and the lower title blinks. To change this title, press MEMORY button. Select DATE, TIME or TITLE.

6. Press TITLE SET button and blinking stops.

7. Press PAUSE/STILL button. Title will be superimposed on the pictures to be shot. To erase the title, press TITLE ON/OFF button.



## Superimposing the title on recording picture by using buttons on the unit.




**SHIFT button**
Select the title to be recorded.

**CURSOR button**
When pressed, title blinks. The upper line blinks by first pressing and the lower line blinks by second pressing. Blinking disappears by the third press.

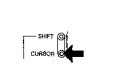
**TITLE POSITION button**
Press this button to change the title position.

**TITLE ON/OFF button.**
Press this button to record title.

1. Press REC START/REC STOP button to set the unit to recording stand-by mode.

2. Press TITLE ON/OFF button and title and date are displayed.

3. To change the title to another one, press CURSOR button. The upper title blinks.




4. Press SHIFT button to select the title to be recorded.

5. Press CURSOR button and lower title blinks. To change the title, press SHIFT button. If CURSOR button is pressed again, blinking stops.

6. Press REC START/REC STOP button. Recording starts and the selected title is superimposed on the picture being shot. The title disappears when the TITLE ON/OFF button is pressed.

# TO SHOOT A QUICKLY MOVING SUBJECT

## Using the 1/1000 Electronic Shutter

SK-3D7 is equipped with the 1/1,000 electronic shutter which allows you to shoot a subject that is moving very fast. Use this feature to record a sequence of quick motion like a sharp swing of tennis or golf. Sharp and clear frames can be enjoyed in still picture mode or in slow motion picture mode if Toshiba's digital four headed VCR is used for playing back.

**Note:** Playing back by this unit will produce blurs and noise on the picture.

Open the One Touch Auto door and press the 1/1,000 shutter button. Indication SH will be displayed in the viewfinder.
When the 1/1,000 shutter is not in use, disengage the 1/1,000 shutter by closing the One Touch Auto door or by pressing again the 1/1,000 shutter button.

**A FEW COMMENTS ON 1/1,000 ELECTRONIC SHUTTER**

**Lighting condition**
The subject for shooting must be lighted by the sun light or by the video light (optional), making the illuminance of the subject more than 300 lux at 10 feet of distance from the light.

Pictures are affected by flickering if recorded in the lighting by discharge tube (fluorescent lamp, mercury lamp, sodiumvapor lamp etc.).

**Playing back**
Since sixty scenes are taken for one second with 1/1,000 second shutter speed, recorded pictures are not smoothly continuous if they are viewed in an ordinary way of play back.

**CAUTIONS:**
- Recorded pictures are darker than ordinary recording because they are shot with such a high shutter speed as 1/1,000 second.
- Backlight compensation function does not always work.
- If you shoot a subject which is brightly illuminated or reflecting bright light, this subject may be recorded with vertical light belt that seems as if it were coming from the subject.

1. **With the ordinary recording**
   The movement of racked is blurred.
2. **With the 1/1,000 shutter**
   The moment of impact can be distinctly recorded.
3. **A sequence of clear pictures as shown here can be recorded.**

# WHITE BALANCE ADJUSTMENT

## What is "White Balance"?

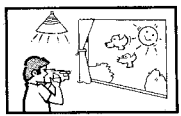
Because a camera is not as adaptable as the human eye, if a light source is reddish, white subjects in that light are recorded as reddish. White balance is performed to compensate for color temperature variations of light so that whites are reproduced as white. Correct white balance makes all other colors correct. SK-9D7 performs automatic white balance adjustment when the One Touch Auto door is kept closed.

**Subjects and conditions for which automatic adjustment is not sufficient.**

In most cases, white balance is correctly adjusted. But under the following conditions, white balance may fail to adjust correctly. Open the One Touch Auto door and select the best balancing by pressing WHITE BALANCE button.

When the amount of light is not sufficient.

When shooting in the red light. For example, shooting at dawn and in the sunset.



When there are different sources of lighting. For example, the sun light is coming in the room and is mixed with the indoor light from fluorescent lamp.

When the subject is lighted by mercury lamp sodium-vapor lamp and some kind of fluorescent lamp.

When shooting a subject of dark or deep color in close-up.

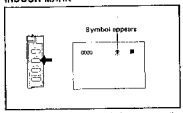
**What is "color temperature"?**
Light is composed of various color components in different proportions. A relationship exists between the temperature of a light source and the color components of the emitted light; as the temperature rises, the color of the light varies from red, orange, yellow, white to blue in that order. "Color temperature" is a value that expresses differences in color among light sources, measured in Kelvin degrees. Bluish light has a higher color temperature than reddish light.



## Manual Setting of White Balance

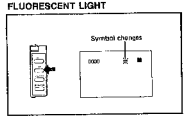
For manual setting of white balance, open the One Touch Auto door and select appropriate balance, pressing the WHITE BALANCE button in the following manner.

### INDOOR MARK



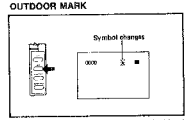

When the subject is inside of a house, press the button once and the indoor mark is displayed in the viewfinder.

### FLUORESCENT LIGHT




When the subject is lighted by fluorescent light, press the button twice and the fluorescent mark appears in the viewfinder.

### OUTDOOR MARK




To shoot an outdoor subject from the inside of a room, press the button three times to obtain outdoor mark in the viewfinder.

### AUTO WHITE BALANCE MODE

The fourth pressing makes white balance to auto white balance mode. The mark disappears.

**How to get good color pictures**
The simplest way is to provide sufficient lighting (close to the camera's reference illuminance) and accurately adjust the camera to the color temperature of that lighting. If light sources of different color temperatures are used together, accurate white balance adjustment is very difficult. For example, if natural light is mixed with artificial light, which is likely to occur next to windows, correct colours of the subject are difficult to obtain. It is recommended in such cases that curtains in the room be closed to shut out light from outside. Also, when artificial lighting devices are used, they should all have the same color temperature. For example, it is recommended that incandescent or halogen lamps not be used together with fluorescent lighting.

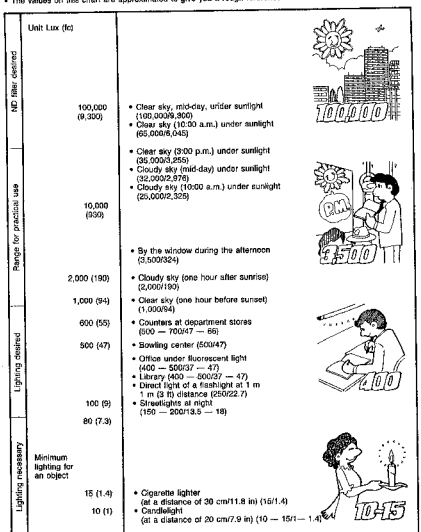
Color temperatures of various artificial lighting

| Type of illumination | | Color temperature |
|---|---|---|
| Tungsten lamp for home use | | 2800 K |
| Tungsten lamp for photographic use | | 3200 K |
| Quartz-halogen lamp | | |
| Blue lamp for photographic use | | 5000 K |
| Fluorescent lamp | Warm white | 3500 K |
| | White | 4500 K |
| | Daylight type | 6500 K |

**What is "Illuminance"?**
"Illuminance" (also called 'luminance') is the intensity or brightness of light, expressed in lux. The SK-9D7 is designed to provide best pictures under the conditions of a 700-lux illuminance, although shooting is possible all the way down to 15 lux.

**Illuminance chart**

• The values on this chart are approximated to give you a rough reference.


ND filter desired
Range for practical use
Lighting desired
Lighting necessary
Unit Lux (fc)
100,000 (9,300)
10,000 (930)
2,000 (190)
1,000 (94)
600 (55)
500 (47)
100 (9)
80 (7.3)
Minimum lighting for an object
15 (1.4)
10 (1)
• Clear sky, mid-day, under sunlight (100,000/9,300)
• Clear sky (10:00 a.m.) under sunlight (65,000/6,045)
• Clear sky (3:00 p.m.) under sunlight (35,000/3,255)
• Cloudy sky (mid-day) under sunlight (32,000/2,976)
• Cloudy sky (10:00 a.m.) under sunlight (25,000/2,325)
• By the window during the afternoon (3,500/324)
• Cloudy sky (one hour after sunrise) (2,000/190)
• Clear sky (one hour before sunset) (1,000/94)
• Counters at department stores (600 — 700/47 — 66)
• Bowling center (500/47)
• Office under fluorescent light (400 — 500/37 — 47)
• Library (400 — 500/37 — 47)
• Direct light of a flashlight at 1 m 1 m (3 ft) distance (250/22.7)
• Streetlights at night (150 — 200/13.5 — 18)
• Cigarette lighter (at a distance of 30 cm/11.8 in) (15/1.4)
• Candlelight (at a distance of 20 cm/7.9 in) (10 — 15/1 — 1.4)

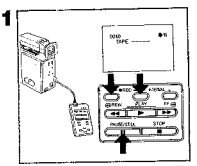


# RECORDING IN DISCONTINUED MOTION

## Interval recording

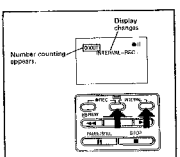
With the interval recording function, a moving subject can be recorded in discontinued motion as if it were an animated cartoon.
One frame is recorded for about one second in every one minute and continuous recording up to 300 frames is possible.
Use the wired remote control unit (supplied) for the interval recording operation.
Use the provided AC adapter TPA-3U as a power source.

**1**



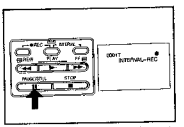

Set to recording stand-by mode by pressing REC buttons and PAUSE/STILL button on the remote control unit.

**2**



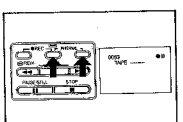

Press simultaneously two INTERVAL REC buttons on the remote control unit. "INTERVAL-REC" and number counting indication appear on the viewfinder.

**3**




Press again PAUSE/STILL button on the remote control unit to start interval recording.
Recording is operated for one second at every other minute.

**4**




To interrupt recording, press simultaneously two INTERVAL REC buttons or STOP button.

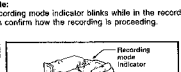
**CAUTIONS:**

- Interval recording repeats 300 times of recording in about five hours and ceases remaining in the recording pause mode. Make certain to press the STOP button when interval recording is completed.
- Use of tripod is recommended.
- Since no sound is recorded with interval recording, it is advised to decrease sound volume of TV monitor while in playback.

## RECORDING WITH SELF-TIMER

SK-3D7 is equipped with a self timer which allows 10 seconds or 60 seconds recording. With this feature all members of your family can be together in the same frame without no one excluded.
Note:
Recording mode indicator blinks while in the recording stand-by mode and lights during recording so that you can confirm how the recording is proceeding.

**1**




Set the camera to recording stand-by mode by pressing REC START/REC STOP button.

**2**

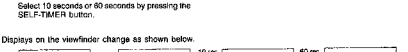
Select 10 seconds or 60 seconds by pressing the SELF-TIMER button.

**3**

Press REC START/REC STOP button. Recording starts 10 seconds after pressing.

- If REC START/REC STOP button is pressed during self-timer recording, self-timer mode is released and the unit is set to recording stand-by mode.
- To release self-timer mode after SELF-TIMER button is pressed, press again SELF-TIMER button to 10 sec or 60 sec and then self-timer mode is released and recording stand-by mode is engaged.

Displays on the viewfinder change as shown below.




SELF-TIMER button is pressed.

REC START/REC STOP button is pressed.

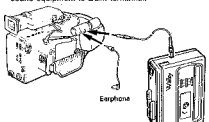
Recording starts

Recording stops in rec stand-by mode

## MIXING MUSIC WITH SOUND RECORDING

### Mixing background music

Music or any other sound can be mixed by connecting sound equipment to BGM terminal.




To monitor sound of the connected equipment, use an earphone.

Remove the microphone when the sound through the microphone is not desired.

Another type of microphone can also be attached.

Refer to the page 27.



## CHARGING THE BATTERY PACK

To charge the battery pack, use the exclusive AC power adapter/battery charger TPA-3U (provided).

### A WORD ON THE EXCLUSIVE TBP-9U BATTERY PACKS

The TBP-9U/TBP-9U are nickel-cadmium batteries. Give attention to the following to make the most of their characteristics.

Temperature ranges:
The recharging time is based on room temperature of 20°C (68°F).
The lower the temperature, the longer the recharging time.

| | |
|---|---|
| For charging: | 10°C to 35°C (50°F — 95°F) |
| For operating: | –10°C to 40°C (14°F — 104°F) |
| For storing: | –10°C to 30°C (14°F — 86°F) |

**The battery pack has been kept in the uncharged state for shipment. Therefore, before use, charge it.**

- To avoid hazard:
  1. Do not burn.
  2. Do not short circuit the terminals.
  3. Do not modify or disassemble.
  4. Use only specified chargers.
- To prevent damage and prolong service life:
  1. Avoid dropping, unnecessary shocks.
  2. Avoid repeated charging without discharging.
- This unit has a limited service life:
  Near the end of its service life, when it begins to deliver less recording time per charge, purchase a replacement.
- It is normal for the unit to be warm after charging or use.
- This is a chemical reaction type battery; its properties are best maintained under the following conditions:
  1. Optimum charging takes place at temperatures between 10°C (50°F) and 35°C (95°F). Cooler temperatures impede chemical reaction. Warmer temperatures can prevent complete charging.
  2. Store in a cool dry place. Extended exposure to high temperatures will increase natural discharge and shorten service life.
  3. Total natural discharge may occur during long storage periods (uncharged storage is preferable; recharge one day before use).
  4. Remove from charger or powered unit when not in use; some machines use current even when switched off.

**PRECAUTIONS FOR TPA-3U**

- If used near a radio, the provided TPA-3U AC power adapter/battery charger may interfere with reception.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to vibrations.

**When using the TPA-3U areas other than the USA/CANADA.**

USING HOUSEHOLD AC PLUG ADAPTER

In case of connecting the unit's power cord to an AC wall outlet other than American National Standard C73 series type, use an AC plug adapter, called a "Siemens Plug", as shown below.
For this AC plug adapter, consult your nearest TOSHIBA dealer.




**Recording time for the SK-3D7**

TBP-9U: About 60 min.

- The recording time per charge is influenced by the duration of recording standby, etc.
  It is safer to have spare battery packs.

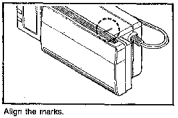
## Charging procedure

Charging time

TBP-9U 90 min.

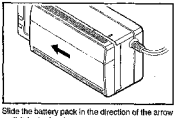
- The charging time differs depending on the ambient temperature and the condition of the battery pack.

**1**



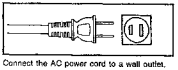
Align the marks.

**2**



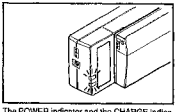
Slide the battery pack in the direction of the arrow until it locks in place.

**3**



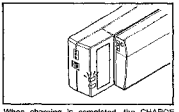
Connect the AC power cord to a wall outlet.

**4**



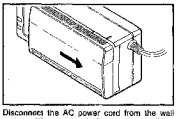
The POWER indicator and the CHARGE indicator light.

**5**



When charging is completed, the CHARGE indicator goes out.

**6**



Disconnect the AC power cord from the wall outlet and then remove the battery pack by sliding it off.

- The battery pack becomes warm immediately after being charged. This is not due to any defect of the unit.
- Disconnect the DC cable from DC output terminal when charging.



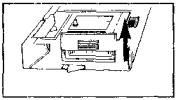
# USING THE CASSETTE ADAPTER

The VHS compact video cassettes recorded with the SK-3D7 can be played back with a standard VHS machine by using the provided TCA-4U Cassette Adapter.
In this case, use a cassette recorded in monaural.
(A compact video cassette installed in the cassette adapter is fully compatible with a standard VHS machine for both recording and playback.)

### Inserting a Compact Video Cassette into the cassette adapter.

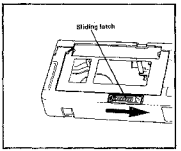
- If there is slack in the video tape when inserting the compact cassette into the adapter, the tape may become damaged. Take up slack in the tape. See page 6.

**Inserting the battery into the cassette adapter**



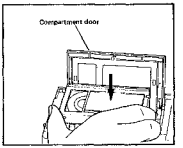
Remove the battery cover by sliding it up. Install one "AA" battery and reattach the cover.

**1**



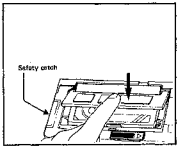

- Push the sliding latch in the direction of the arrow to open the door.
- The compartment door opens.

**2**



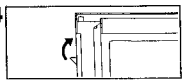

- Insert the cassette as illustrated.
- Be sure to insert it squarely, not tilted.
- Be sure there is no slack in the tape.
- Do not touch the tape when inserting a compact cassette into the cassette adapter.

**3**



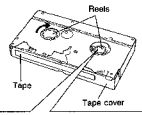

- Close the compartment door.
- The tape will be threaded automatically.

**4**



- The safety catch will retract. This indicates that the tape threading is completed.

**CAUTION:**
Check the tape condition after inserting the cassette and tape loading is completed:
1) Check to see if there is any tape slack.
(Do not open the tape cover.)
2) If there is tape slack, remove it by turning the reel in the direction of the arrow.




**CAUTION:**
During tape loading and unloading, do not touch the cassette's reels for safety and tape protection.

### Playing back the tape

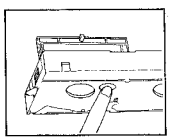
1. Load the cassette adapter in a VHS deck in the same way as you would load a regular VHS tape.
2. Operate the VHS deck as usual.

- Note that playback special effects can be performed using the VHS deck.
- If noise bars appear, adjust the tracking of the playback deck. Be sure to reset the tracking control to its normal position when you have finished playing back compact VHS tapes.
- Consult the video deck's instruction book for its operation.

**Notes:**
- During special effects playback (slow motion, still frame, etc.) the picture may vibrate or noise bars may appear on the screen.
- The protruding safety catch indicates that loading of the tape has not yet been completed. In this condition, NEVER attempt to load the cassette adapter into a recorder, as this could damage both.
- Do not load and unload the cassette adapter into a recorder repeatedly without allowing the tape to run. This will slacken the tape and thereby damage it.
- The cassette adapter cannot be loaded upside down.
- After use, remove the cassette from the adapter.

### Removing the Compact Video Cassette

Slide the latch to open the door, then push up on the cassette to remove it, pushing on the cassette with your finger through the hole in the bottom of the adapter.



**Notes:**
- This cassette adapter is precision-manufactured. Avoid violent vibrations or shocks. Do not drop or disassemble or modify it, otherwise malfunctions may result.
- When placing the cassette adapter into its case, slide the cassette adapter into the case safely catch end first.



# ACCESSORIES

For maximum enjoyment, make the most of the provided accessories depending on the situation.

**1 High-capacity battery pack TBP-9U**

**2 AC power adapter/ battery charger TPA-3U**

Use to power the SK-3D7 with household AC current or charge the battery pack.

**3 Compact video cassette TC-20**

Allows 20 minutes of recording and playback in SP mode, and 60 minutes of recording and playback in EP mode.

**4 Cassette adapter TCA-4U**

Enables the TC-20 compact video cassette to be used with regular VHS machines.

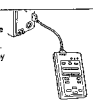
**5 A/V output cable**

Use to connect the SK-3D7 to a television set equipped with audio/ video input connectors for playback, or to a second video dubbing.

**6 Video cable**

**7 Remote control unit and connecting cable**

With this Remote control unit, you can enjoy the many features of SK-3D7.



**8 3D adapter-VDA3D2**

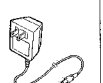
**9 Lithium battery**

This battery is to be used as the power source of the built-in clock and character generator.

**10 Shoulder belt**

**11 AC adapter VDP 3D2**

This adapter is to be used for the 3D adaptor.



## Principle of the three-dimensional video system

When a person views an object with two eyes, the position of the object perceived through the right eye is different from that perceived through the left eye. This phenomenon is called "binocular parallax" with which a person can obtain the information of depth and perspective. The three-dimensional video system applies this phenomenon.

In the camcorder section, the CCD image sensors are mounted individually on the right and left lenses. The video signal from the left lens and that from the right lens are switched by 1/60 second field cycle to compose one video signal. This unit performs switching operation immediately after the video signal is output from each CCD, owing to its compact and light weight design.

In the monitor section, the picture recorded with the three-dimensional camcorder is displayed on the TV screen through the LCD spectacle shutter. The operation of the LCD spectacle shutter is shown in Fig. 2. While the picture from the left lens is displayed on the TV screen, the left shutter is open and the right shutter is closed. While the picture from the right lens is displayed on the TV screen, the right shutter is open and the left shutter is closed. Consequently, through the LCD shutter, the left eye views the picture from the left lens and the right eye views that from the right lens so that the object looks stereoscopically.

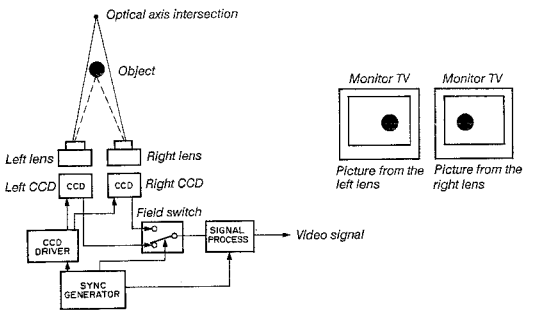



**Fig. 1 "3D" camcorder block diagram**

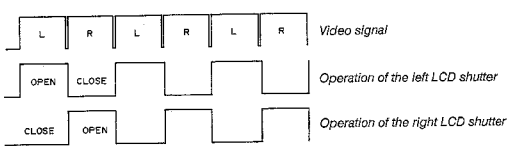



**Fig. 2 Operation of the LCD spectacle shutter**

# SECTION 2
# ADJUSTMENT PROCEDURES

## 1. LOCATION OF MECHANICAL PARTS

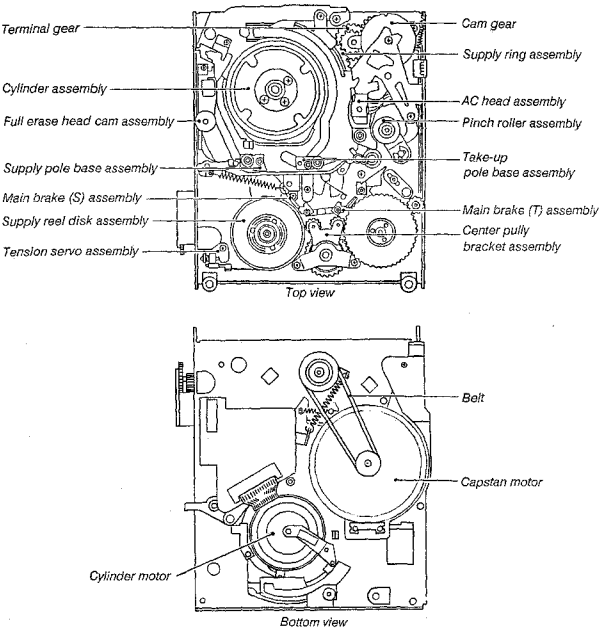



Fig.1

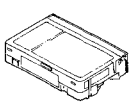
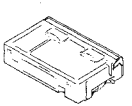
# 2. LIST OF SERVICING JIGS

## 2-1. Mechanical Adjustment Jigs

(1) For correct and easy adjustment of the mechanism, the following special jigs are required.

(2) The following measurement equipment and tools are also required for adjustment.
- Color TV monitor
- Hexagonal wrentch
- Oscilloscope (wide range)
- Precision screwdriver
- Cassette tape (for both running test and recording)

**Note:**
For electrical adjustment jigs, refer to "5. ELECTRICAL ADJUSTMENT".

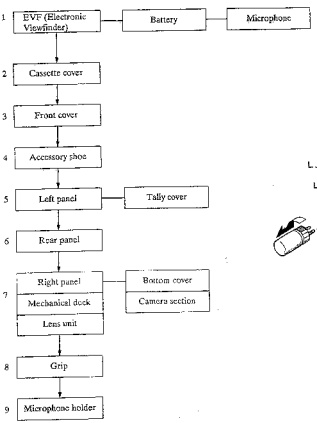
| Alignment tape | Torque cassette PUJ50431-2 | Patch cord | AC head positioning jig YTU93002 |
|---|---|---|---|
| ST-CN1 SN:70909229 | SN:70909209 | SN:70909251 | SN:70909250 |
|  |  | | |

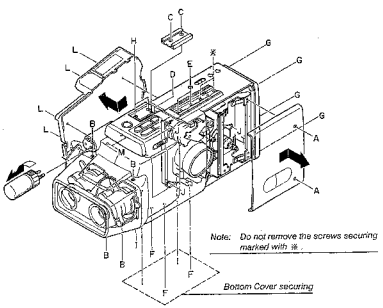
MH-C1 (70909208) can be used instead of alignment tape ST-CN1

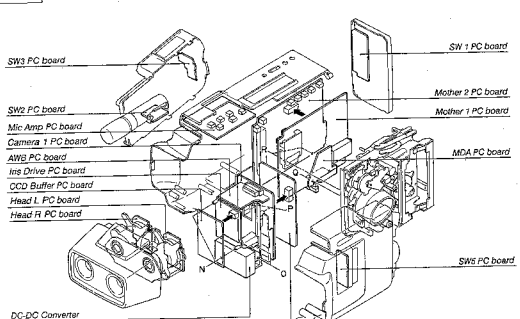
Fig.2-1

# 3. REMOVAL OF CABINET AND PC BOARDS

**Disassembly flowchart**



## 3-1. Removal of Cabinet

**(1) Removal of the cassette cover**
- Remove 2 screws A.
  (Do not reuse removed screws A. Replace them with new ones.)

**(2) Removal of the front cover**
- Remove 4 screws B.

**(3) Removal of the accessory shoe**
- Remove 2 screws C.

**(4) Removal of the left panel**
- Remove screw D.
- Remove 2 screws E.
- Remove 3 screws F on the bottom.
- Remove connectors PS06 and PS07 from the SW4 PC board and the one-touch-auto connector on the left panel. (Remove the tally cover together with the left panel.)

**(5) Removal of the rear panel**
- Remove 4 screws G.

**Note:**
Remove the connectors of each PC board from the AV connector. However, P702 of the mother 1 PC board, and P308 and P805 of the mother 2 PC board must be removed after removing the mechanical deck in step (6).

**(6) Removal of the right panel**
- Remove 2 screws H.
- Remove 3 screw I.
  (The bottom cover can also be removed.)

**Note:**
When removing the bottom cover, also remove the connector P608 of the mother 2 PC board.

**(7) Removal of the mechanical deck**
- emove 3 screws J.
- Remove connectors P603, P801 and P804 at the grip of the mother 2 PC board.

**(8) Removal of the lens unit**
- Remove 2 screws K.

**(9) Removal of the grip**
- Remove 4 screws L.

**(10) Removal of the microphone holder**
- Remove 2 screws M.
- Remove connectors PM01 and PM02 from the MIC AMP PC board.

## 3-2. Removal of Each PC Board

**Note:**
The removal procedure of the panels is the same as in "Removal of Cabinet".

**«Camera section»**

* Proceed steps 1 through 7 of the disassembly flowchart until the right panel (mechanical deck) removal.

(1) Remove the relay connector from the DC-DC converter. (Remove the DC-DC converter by removing 2 screws O.)
(2) Remove the hinge connector between the AWB PC board and the camera 1 PC board and remove the AWB PC board by raising and pulling it.
- Remove connector PA02.

(3) Remove the CCD BUFFER PC board by removing 2 screws N.
(4) Pull to disconnect the IRIS DRIVE PC board and the CCD BUFFER PC board. The IRIS DRIVE PC board and the CCD BUFFER PC board are connected by "B to B" connector, so that they can be easily disconnected.
(5) Pull to disconnect the mother 1 and mother 2 PC boards. Mother 1 and mother 2 PC boards are connected by "B to B" connector, so they can be easily disconnected.
(6) Remove the camera 1 PC board by removing 2 screws P.

**«Deck section»**

* Proceed steps 1 through 7 of the flowchart until the right panel (mechanical deck) removal.

(1) Pull to disconnect the mother 1 and mother 2 PC boards. Mother 1 and mother 2 PC boards are connected by "B to B" connector, so they can be easily disconnected.
(2) Remove the mother 1 PC board by removing 2 screws R and the FPC (PR11, PR21).
(3) Remove the MDA PC board by removing 2 screws Q and the FPC (PZ02).

# 4. MECHANISM ADJUSTMENT

## 4-1. Before Mechanical Adjustment

(1) This section describes procedures of mechanical parts replacement when they are worn out or damaged by accident.
(2) Perform mechanical adjustments carefully as they are deeply related to electrical adjustments and especially consist in the basis of electrical adjustments.
(3) When operating the mechanism without using a cassette tape, cover the end sensor and the cassette-detection switch on the deck section to shield the light with adhesive black tape. In this case, the mechanism will easily enter unloading mode if the reel disk does not rotate.

## 4-2. Upper Cylinder Replacement

(1) Unsolder all the soldered points (16 locations) and remove 2 screws.
(2) Remove the upper cylinder PC board together with the upper cylinder.
When the upper cylinder is difficult to remove, attach the jig supplied with a new replacement upper cylinder to the old cylinder as in Fig. 4-2-1. To replace the upper cylinder, insert the upper cylinder into a 50 W soldering iron and heat to expand it for 3 to 5 minutes.
After heating, be careful not to raise the temperature of the upper cylinder more than 85°C. (Fig. 4-2-2 and 4-2-3)
The upper cylinder of this unit has a higher mechanical precision than the conventional models. Therefore, the gap between the shaft and the hole is small. (Heat the upper cylinder to approx. 50°C.)
(3) Replace the upper cylinder. Be careful not to touch or damage the head on the cylinder.
(4) Mount the new upper cylinder on the lower cylinder, aligning the brown pin on the upper cylinder head with the red wire on the lower cylinder. Then, attach the upper cylinder PC board. (Fig. 4-2-4)
(5) After replacement, check and adjust the FM waveform (Item 4-5-1).

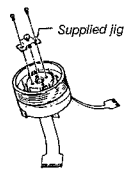



Fig. 4-2-1 Jig mounting

Fig. 4-2-2

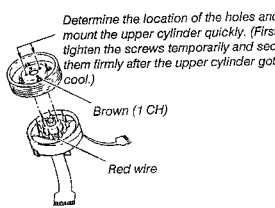

Determine the location of the holes and mount the upper cylinder quickly. (First tighten the screws temporarily and secure them firmly after the upper cylinder got cool.)
Brown (1 CH)
Red wire

Fig. 4-2-3

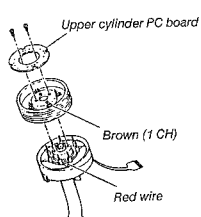



Fig. 4-2-4 Upper cylinder assembly

## 4-3. Check and Adjustment

When installing the following parts after replacement or removal, confirm the position is correct.

### 4-3-1. Timing Check of Loading Rings and Cam Gear

Before replacing or removing the take-up and supply loading rings, make sure that the loading rings are in stop mode as in Fig. 4-3-1 (a).

(1) Remove the worm gear (inside the loading motor bracket assembly) and turn the take-up and supply loading rings in the unloading direction.
(2) Adjust the position of the loading rings so that the hole on the supply loading ring and the V slot on the take-up loading ring are aligned with the triangle mark on the main deck when observing from the deck side. (Fig. 4-3-1 (a))

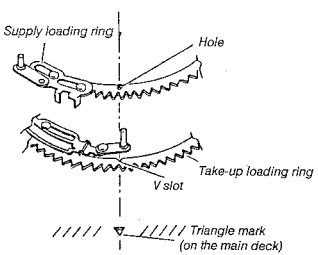



**Fig. 4-3-1(a) Loading ring phase matching**

When matching the phase of the loading rings, depress the eject lever on the bottom of the deck toward the reel as in Fig. 4-3-1 (b).
The eject lever will not function if it is not in this position.

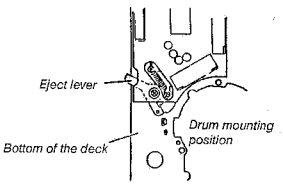



**Fig. 4-3-1(b) Eject lever phase matching**

(3) To facilitate the positioning of the two loading rings described in step (2), it is advisable to secure one of the three ring guides which is located the nearest to the take-up ring (AC head side) on the other two loading rings.
(4) Assemble so that the mark on the control cam (gear) and the center of the terminal gear axis are positioned as shown in Fig. 4-3-2. This is stop mode position.

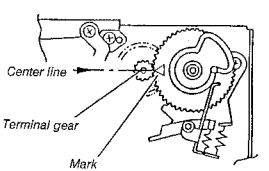



**Fig. 4-3-2 Control cam phase matching**

### 4-3-2. Mode Control Switch

In stop mode, the mode control switch is set as in Fig. 4-3-3.

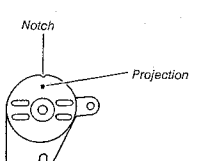



**Fig. 4-3-3 Mode control switch phase matching**

### 4-3-3. Middle Pole

In stop mode, the middle pole and the arm gear are set as in Fig. 4-3-4.

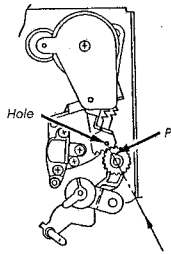



Fig. 4-3-4 Middle pole phase matching

### 4-3-4. Check of Tension Pole Position and Back Tension Adjustment

Insert a cassette tape and set the unit to playback mode. Make sure that the tension pole assembly and the center of the impedance roller are in line with the front of the deck (cassette housing side).

**Note:**

The torque will decrease by turning screw A show in Fig. 4-3-5 counterclockwise, and it will increase by turning the same screw clockwise.

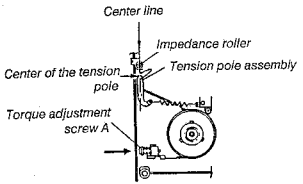



Fig. 4-3-5 Tension pole phase matching

## 4-4. Check and Adjustment of Tape Transport System

**Note:**

The following checks and adjustments are required only when a worn-out or damaged mechanical part of the tape transport system is replaced, etc.

### 4-4-1. Adjustment of Tape Transport System

**(1) Guide roller**

1) The guide roller height adjustment is necessary for obtaining the linearity of the FM waveform at the entrance and exit in the interchangeability adjustments.
2) Play back a tape (except the alignment tape) and adjust the supply guide roller height by eye measurement, using a 1.4 mm hexagonal wrench, so that the tape runs smoothly along the cylinder lead at the cylinder entrance.
3) Adjust the take-up guide roller height in the same way at the cylinder exit.

**(2) Impedance roller**

**Note:**

The impedance roller provides the standard height on the supply side and the nut securing the impedance roller is not used for adjustment. Terefore, this adjustment is not necessary in general.

1) The position of the impedance roller related to the main deck is shown in Fig. 4-4-1. This height is the standard at the supply side (tape entrance).

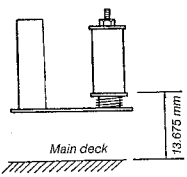



Fig. 4-4-1 Impedance roller

**(3) Audio/Control head (by the side of the take-up guide pole)**

**Note:**
The adjustment of the audio/control head is important in the interchangeability adjustments.

1) After the adjustment of the take-up guide roller, adjust the tilt of the audio/control head so that the tape runs smoothly along the flange of the take-up guide pole. For the adjustment, turn screw B using a precision screwdriver. (Fig. 4-4-2)
2) As an example of adjustment, first turn screw B counterclockwise so that tape wrinkle is caused at the lower flange of the take-up guide pole, and then turn screw B clockwise until the wrinkle disappears.
3) Tilt adjustment is now completed. Proceed to the azimuth and height adjustments. (refer to the item 4-5-2.)

**Note:**
The take-up guide pole is adjusted at the factory to provide the standard height on the take-up side (tape exit). Do not perform any adjustment on the take-up

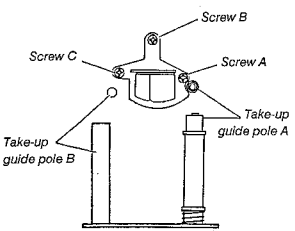



**Fig. 4-4-2 AC head adjustment**

## 4-5. Check and Adjustment for Interchangeability

**Note:**
Before using the alignment tape for interchangeability adjustment, check if the tape transport system works correctly using another tape. If any problem is observed, remove the source of the problem to prevent any damage to the high-priced alignment tape.

### 4-5-1. FM Waveform Check and Adjustment

For the FM waveform check and adjustment, use the stairstep signal on the ST-CN1 alignment tape.

(1) Play back the ST-CN1 alignment tape and adjust the tracking control for maximum FM waveform. Make sure that the maximum output (a), minimum output at the center of the waveform (b), minimum output at the cylinder entrance (c) and minimum output at the cylinder exit (d) meet the FM waveform specifications shown in Fig. 4-5-1.

b/a>0.8 c/a>0.7 d/a>0.7
(video FM waveform specifications)

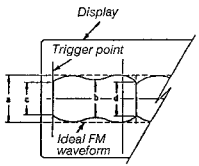



**Fig. 4-5-1 FM waveform**

(2) If the FM waveform specifications are not met or if the variation through the whole FM waveform is not linear, perform the adjustment repeatedly.
If the waveform variation is not linear, the signal level may lower partially and noise may occur.

(3) Adjust the tracking control to vary the FM waveform output from maximum to minimum, and from minimum to maximum and make sure that the FM waveform at the cylinder entrance side varies almost in parallel. If the amplitude of the FM waveform varies from wide to narrow, or vice versa, the supply guide roller height is incorrect: i.e. the tape does not run correctly along the cylinder lead surface at the cylinder entrance. In this case, adjust the supply guide roller height so that the FM waveform varies almost in parallel. (refer to the Fig. 4-5-2)

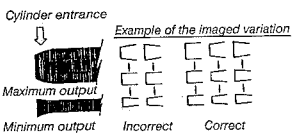



**Fig. 4-5-2 FM waveform variation at the cylinder entrance side**

(4) The FM waveform output at the cylinder exit side (take-up side) should also vary in parallel from the maximum output to minimum. If necessary, adjust the take-up guide roller (tape exit side) height in the same way as in step (3) for the supply guide roller. (refer to the Fig. 4-5-3)

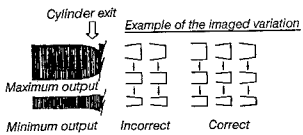



**Fig. 4-5-3 FM waveform variation at the cylinder exit side**

(5) Adjust both supply and take-up guide rollers precisely so that the FM waveform output varies in parallel and linearly at every point of the waveform by adjusting the tracking control.

(6) After completion of the guide roller adjustment, make sure that no tape wrinkle is observed at the impedance roller and take-up guide pole.
Only when there is tape wrinkle at impedance roller, lower the impedance roller position slightly.
If there is tape wrinkle at the take-up guide pole, adjust the tape-to-head contact, i.e. the tilt of the audio/control head, so that the tape runs correctly along the lower flange of the guide pole.
After removal of the tape wrinkle, check the FM waveform again.

### 4-5-2. Audio/Control Head Adjustment

If the audio/control head position is incorrect, interchangeability is not obtained when a recorded tape is played back on another VCR.
To monitor the audio signal, connect an oscilloscope to the audio output terminal.

(1) Play back the stairstep signal (audio signal: 7 kHz) on the ST-CN1 alignment tape.
(2) Adjust the AC head height by turning screws A, B and C shown in Fig. 4-5-4 equally little by little.

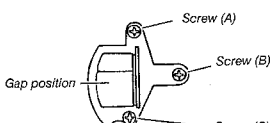



**Fig. 4-5-4**

(3) Turn screw A in Fig. 4-5-4 so that the maximum audio output is obtained.
(4) Turn screws A, B and C respectively, little by little (by 45° or so each time), in the same direction and to the same extent, varying the audio/control head height, until the audio output becomes maximum.

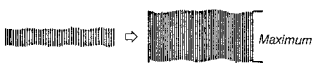



Fig. 4-5-5 AC head adjustment

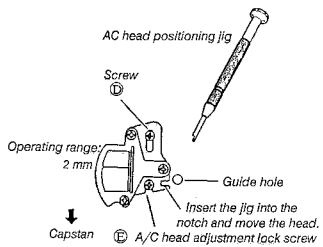



Fig. 4-5-6 A/C head phase adjustment

**4-5-3. Adjustment of Audio/Control Head Phase**

Set the tracking control to the center click position.

(1) Play back the stairstep signal on the ST-CN1 alignment tape.
(2) Slightly loosen screws D and E on the audio/control head, insert the legs of the AC head positioning jig into the notch and the guide hole respectively and move the audio/control head fully toward the capstan. (Fig. 4-5-6)
(3) Move the audio/control head in reverse direction (as shown in Fig. 4-5-6) while observing the FM waveform variation at CH-1, and stop moving it at the first peak output. Tighten screws D and E.
(4) Make sure that the FM waveform is maximum at the tracking center position.

**4-5-4. Final Check**

(1) Make sure that the FM waveform of the recording in this unit meets the "video FM waveform specifications" (SP and EP modes).
(2) Referring to "ELECTRICAL ADJUSTMENT", perform the total check and adjustment of the servo, video and audio circuits (including FM audio circuit).

# 5. ELECTRICAL ADJUSTMENT

## 5-1. Adjustment of Camera Section

### 5-1-1. Preparations and Checks Before Adjustment

**(1) Before adjustment**

This adjustment procedure may mostly be used after an electrical component is replaced.
When a trouble occurs in any elecrical circuit, find out the defective part using test equipment, repair or replace it, and then perform the adjustment. Do not move controls until the detective part is found. Some troubles do not require adjustment. Perform the necessary adjustment items only in actual servicing.

**(2) Test equipments required**

1) Oscilloscope, 5 mV/div, 2 channels
2) Color monitor
3) Light
   Toshiba photo reflector lamp (500 W) x 2
   or halogen lamp (500 W) x 2

**Note:**
Set the lighting equipment so that the chart surface is illuminated uniformly. Adjustments cannot be performed correctly if the illumination on the chart surface is not uniform.

4) Toshiba camera adjustment charts
   Color bar chart Part Code: 70909322
   Gray scale chart Part Code: 70909321

**Note:**
Use a new, clean chart for the adjustment.

5) AC adaptor (TPA-3U)
6) Alligator crip and 10 k ohm resistor
7) Screwdriver with plastic tip
8) Tripod
9) Cable with phono plugs
10) Color temperature conversion filter (C16)
    Part Code: 70909323
11) Alignment tape ST-CN1 Part Code: 70909229
12) Back focus screwdriver Part Code:
13) Y/C separating jig Part Code: 70670219
14) Test mode jig Part Code: 70909325
15) Lead wire (used to Y/C separating jig)
    Part Code: 70909324

**(3) Initial setting**

1) Place the chart 60 to 65 cm apart from the front of the camera and adjust lighting so that the chart is illuminated uinformly.
2) Connect the video output signal to the color video monitor and terminate it at 75 ohm.
3) Set the switches on the camera as follows:

| | | |
|---|---|---|
| 1/1000 SHT | : | OFF |
| BLC | : | OFF |
| Auto Focus | : | OFF |
| WB | : | mark (3000°K mode) |
| | | or |
| | | mark (6000°K mode) for AWB 2 adjustment |

**(4) Switching of 3D and MONO**

Always perform the adjustment in the MONO L or MONO R mode. (MONO L mode is used when not mentioned).
To set the unit to the MONO L or MONO R mode, short-circuit PX07 Pin 1 and Pin 2 on the iris drive PC board and press the 3D/MONO button connected to WY03 on the CCD buffer PC board. Each time the button is pressed, the MONO L or MONO R mode is selected cyclically.

**Note:**
Perform servicing on the camera unit where there is less dust to keep the lens clean. When handling the CCD image sensor, take special care to electrostatic breakdown. Use an antistatic mat or ground the soldering iron to prevent electrostatic breakdown.

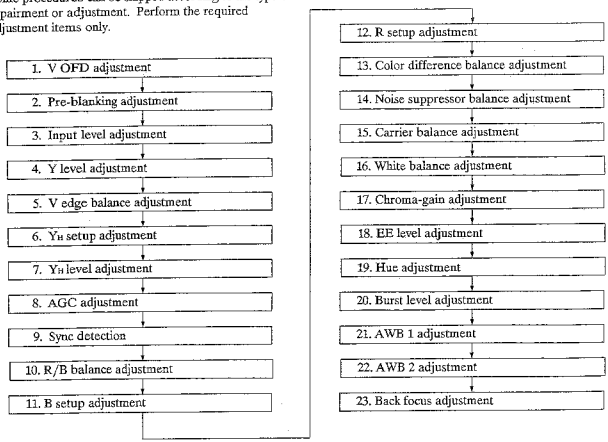
## Alignment tape specifications

ST-CN1

| Item No. | Video signal | Audio signal | Usage | Record Mode | Record Time |
|---|---|---|---|---|---|
| 1 | ——— | ——— | ——— | SP | 1 min. |
| 2 | Color bar | 1kHz | Check of color level in SP mode<br>Operation check in SP mode<br>Audio level adjustment | SP | 5 min. |
| 3 | RF sweep | 3kHz | Adjustment of video frequency response in SP mode | SP | 3 min. |
| 4 | Stairstep | 7kHz | Adjustment of switching position<br>A/C head azimuth adjustment | SP | 3 min. |
| 5 | 2 MHz<br>(recorded on channel A only) | 400Hz | Check of A/C head position<br>A/C head height adjustment<br>Control head position adjustment<br>Check of interchangeability in SP mode (32 $\mu$m) | SP | 6 min. |
| 6 | 3 MHz<br>(recorded on channel A only) | ——— | Check of control head position<br>Linearity adjustment<br>Check of interchangeability in EP mode (32 $\mu$m) | EP | 3 min. |
| 7 | Color bar | 1kHz | Check of color level in EP mode<br>Operation check in EP mode | EP | |

### 5-1-2. Flowchart

The following adjustment procedures are necessary for adjustments of all the controls on the camera section. Some procedures can be skipped according to the type of repairment or adjustment. Perform the required adjustment items only.



### 5-1-3. Adjustment Procedures

**(1) V OFD adjustment**

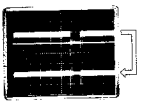
- Test point : TV01
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RX50, RB50 L
  RX51, RD50 R
- Adjusting item : Highlight clipping

1) Set the unit to the MONO L mode.
2) Point the camera to the gray scale chart and display it on the whole screen.
3) Turn RX50 fully clockwise to open the iris.
4) Turn RB50 counterclockwise little by little from the position fully turned clockwise (V OFD 20 V) for the clipping point at highlight.
5) Set the unit to the MONO R mode.
6) Turn RX51 and RD50 in the same manner for the clipping point at highlight.

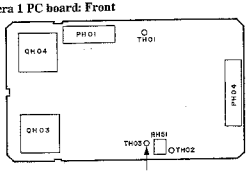
**(2) Pre-blanking adjustment**

- Test point : TV02 (through 10 k ohm resistor)
- Test equipment : Oscilloscope (Trigger TH03)
- Adjusting point : RV50, RV51
- Adjusting item : Minimum WHD pulse

1) Put the lens cap on.
2) Turn RV51 for maximum noise. (AGC ON)
3) Turn RV50 so that WHD pulse is zero.
4) Turn RV51 for minimum noise. (AGC OFF)



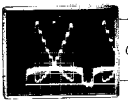
**Camera 1 PC board: Front**



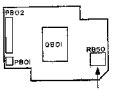

**(3) Input level adjustment**

- Test point : TV01 (through 10 k ohm resistor)
- Test equipment : Oscilloscope (Trigger TH03)
- Adjusting point : RX50, RX51
- Adjusting level : 0.6 Vp-p

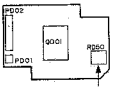
1) Set the unit to the MONO L mode.
2) Point the camera to the gray scale chart and display it on the whole screen.
3) Observe waveform at TV01 through 10 k ohm resistor.
4) Adjust RX50 so that the level between the optical black and the center white is 0.6 Vp-p.
5) Set the unit to the MONO R mode and adjust RX51 so that the level between the optical black and the center white is 0.6 Vp-p.



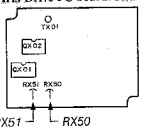

**Head L PC board : Rear**



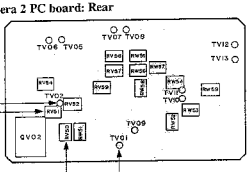

**Head R PC board : Rear**




**Iris Drive PC board: Rear**



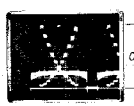

**Camera 2 PC board: Rear**



**(4) Y level adjustment**

- Test point : TV02
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RV52
- Adjusting level : 0.6 Vp-p

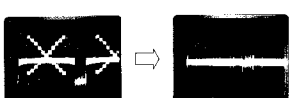
1) Point the camera to the gray scale chart and display it on the whole screen.
2) Observe waveform at TV02.
3) Adjust RV52 so that the level between the blanking and the center white is 0.6 Vp-p.




**(5) V edge balance adjustment**

- Test point : TH02
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RH51
- Adjusting item : Minimum waveform

1) Point the camera to the gray scale chart and display it on the whole screen.
2) Observe waveform at TH02.
3) Adjust RH51 for minimum waveform.



**(6) YH setup adjustment**

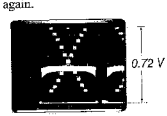
- Test point : TV13
- Test equipment : Oscilloscope (Trigger TH03)
- Adjusting point : RW51
- Adjusting level : 50 mV

1) Put the lens cap on.
2) Observe waveform at TV13.
3) Adjust RW51 so that the setup level is 50mV.

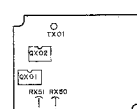
**(7) YH level adjustment**

- Test point : TV02, TV13
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RX50, RV59
- Adjusting level : 0.72 V

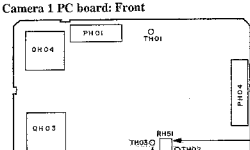
1) Point the camera to the gray scale chart and display it on the whole screen.
2) Adjust RX50 so that the signal level at TV02 is 0.6 V.
3) In this condition, adjust RV59 so that the signal level at TV13 is 0.72 V.
4) Put the lens cap on and check the YH setup. If it is incorrect, perform the YH setup and YH level adjustments again.



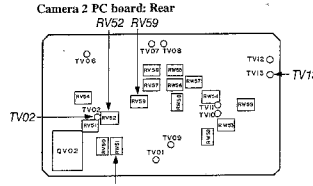

**Iris Drive PC board : Rear**




**Camera 1 PC board: Front**




**Camera 2 PC board: Rear**



**(8) AGC adjustment**

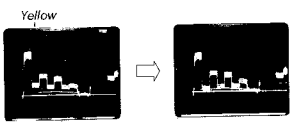
- Test point : TV13
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RX50, RV51
- Adjusting level : 0.55 Vp-p

1) Point the camera to the gray scale chart and display it on the whole screen.
2) Adjust RX50 so that the signal level at TV13 is 0.5 Vp-p.
3) Short-circuit TX01 and TH01 using a clip or similar.
4) Adjust RV51 so that the signal level at TV13 is 0.55 Vp-p.
5) Open-circuit TV01 and TV02.
6) Adjust RX50 so that the signal level at TV13 is 0.72 Vp-p.

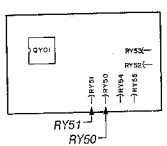
**(9) Sync detection**

- Test point : TV06
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RV54
- Adjusting item : Minimum yellow level

1) Point the camera to the color bar chart and display it on the whole screen.
2) Observe waveform at TV06.
3) While observing the blue line signal, adjust RV54 so that the yellow signal level on the color bar chart becomes minimum.



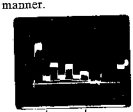

**CCD Buffer PC board : Rear**



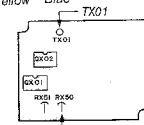

**(10) R/B balance adjustment**

- Test point : TV06
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RY50, RY51
- Adjusting item : Yellow/blue = 1/2

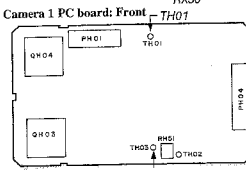
1) Set the unit to the MONO L mode.
2) Point the camera to the color bar chart and display it on the whole screen.
3) Observe waveform at TV05.
4) While observing the blue line signal, adjust RY50 so that the yellow signal level on the color bar chart is half the blue signal level.
5) Set the unit to the MONO R mode and adjust RY51 in the same manner.



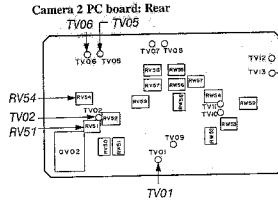

**Iris Drive PC board : Rear**




**Camera 1 PC board: Front**



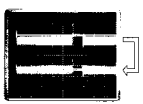

**Camera 2 PC board: Rear**



**(11) B setup adjustment**

- Test point : TV07
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RV58
- Adjusting item : Minimum WHD pulse

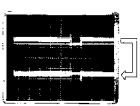
1) Put the lens cap on.
2) Adjust RV58 so that the WHD pulse at TV07 is minimum.



**(12) R setup adjustment**

- Test point : TV08
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RV57
- Adjusting item : Minimum WHD pluse

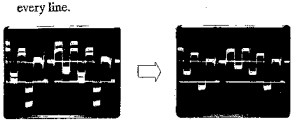
1) Put the lens cap on.
2) Adjust RV57 so that the WHD pulse at TV08 is minimum.



**(13) Color difference balance adjustment**

- Test point : TV11
- Test equipment : Oscilloscope (Trigger: TV13)
- Adjusting point : RW52
- Adjusting item : Best line balance

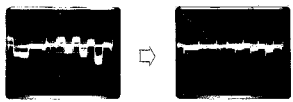
1) Point the camera to the color bar chart and display it on the whole screen.
2) Observe waveform at TV11 and adjust RW52 so that no level difference is present on the waveform on every line.



**(14) Noise suppressor balance adjustment**

- Test point : TV09
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RW53
- Adjusting item : Minimum waveform

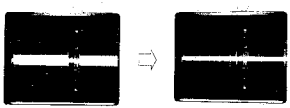
1) Point the camera to the color bar chart and display it on the whole screen.
2) Adjust RW53 so that the waveform at TV09 is minimum.



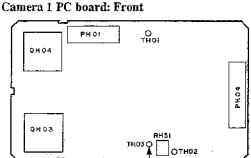
**(15) Carrier balance adjustment**

- Test point : TV12
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RW55, RW56
- Adjusting item : Minimum carrier leakage

1) Put the lens cap on.
2) Observe waveform at TV12. Adjust RW55 and RW 56 alternately so that the carrier leakage is minimum.

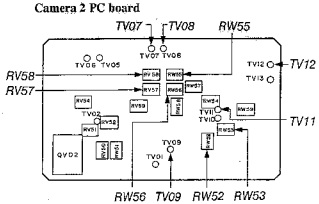


**Camera 1 PC board: Front**




TH03

**Camera 2 PC board**



**(16) White balance adjustment**

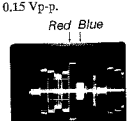
- Test point : TV12, TV13
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RY53, RY55 (L)
  RY52, RY54 (R)
- Adjusting item : Minimum carrier leakage

1) Set the unit to the MONO L mode.
2) Point the camera to the gray scale chart and display it on the whole screen.
3) Observe waveform at TV12 on channel 1 of the oscilloscope, and TV13 on channel 2. (Set channels 1 and 2 to the same vertical range.)
4) Set the oscilloscope to ADD mode and add the signal on channel 1 to that on channel 2.
5) Adjust RY53 and RY55 alternately so that the carrier leakage of the added signal is minimum.
6) When the oscilloscope is not provided with ADD mode, observe waveform at TV12 and adjust RY55 and RY55 alternately so that the carrier leakage is minimum.
7) Set the unit to the MONO R mode and adjust RY52 and RY54 in the same manner so that the carrier leakage is minimum.

**(17) Chroma-gain adjustment**

- Test point : TV12, TV13
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RW59, RW57
- Adjusting level : R carrier 0.55 Vp-p
  B carrier 0.15 Vp-p

1) Point the camera to the color bar chart and display it on the whole screen.
2) Adjust RX50 so that the luminance level of white on the color bar chart is 0.72 V at TV13.
3) In this condition, observe waveform at TV12 and adjust RW59 so that the red carrier on the color bar chart is
   0.55 Vp-p.
4) Adjust RW57 so that the blue carrier on the color bar chart is 0.15 Vp-p.

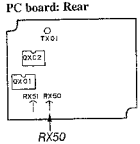



**(18) EE level adjustment**

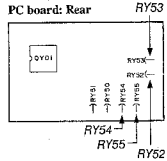
- Test point : TV13
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RX50
- Adjusting level: 0.72 V

1) Point the camera to the gray scale chart and display it on the whole screen.
2) Observe waveform at TV13 and adjust RX50 so that the white signal level on the center of the gray scale chart is 0.72 Vp-p.

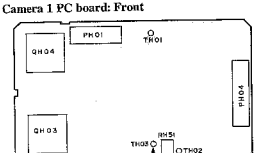
**Iris Drive**
**PC board: Rear**



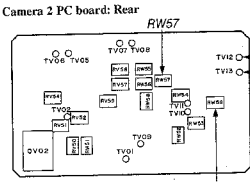

**CCD Buffer**
**PC board: Rear**




**Camera 1 PC board: Front**




**Camera 2 PC board: Rear**



**(19) Hue adjustment**

- Test point :
- Test equipment : Color monitor
- Adjusting point : RW54
- Adjusting item : Fine adjustment for natural color tone

**Note:**

For this adjustment, the hue and color of the color monitor should have been adjusted correctly.

1) Point the camera to a color subject. While observing the subject on the monitor screen, adjust RW54 finely so that the skin tone, red, green and blue are displayed naturally.

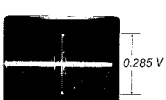
**Note:**

Do not adjust the color tone excessively. Adjust it finely.

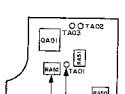
**(20) Burst level adjustment**

- Test point : TV12
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RW58
- Adjusting level : 0.285 Vp-p

1) Put the lens cap on.
2) Observe waveform at TV12 and adjust RW58 so that the burst level is 0.285 Vp-p.

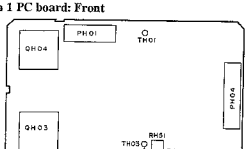



**Auto white Balance**
**PC board: Rear**




RA52 TA01

**Camera 1 PC board: Front**

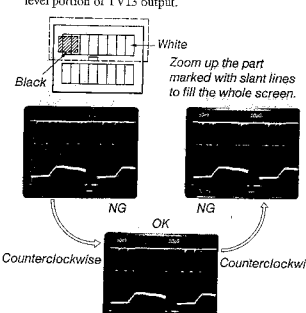



TH03

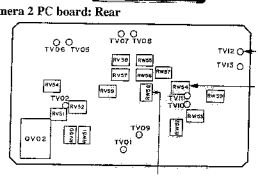
**(21) AWB 1 adjustment**

- Test point : TA01, TV13
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RA52
- Adjusting item :

1) Set the B.L.C. backlight compensation switch to ON.
2) Illuminate the gray scale chart as bright as possible with halogen lamps. Point the camera to the gray scale chart at a 30 cm distance so that the upper half of the chart is positioned at the center. (see figure below), (Continue adjustment although the picture is out of focus.)
3) Observe waveform at TA01 and TV13 simultaneously on the oscilloscope. (If the two channels cannot be observed at a time, perform adjustment by observing them alternately.)
4) By turning RA52 counterclockwise, pulses will appear on the whole TA01 output. By turning more, pulses will disappear in sequence from the highest TV13 output level portion. Adjust RA52 until few noise pulses will be generated only in the saturation level portion of TV13 output.




**Camera 2 PC board: Rear**

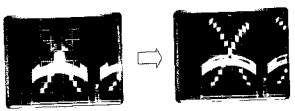



RW58

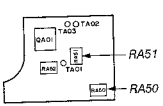
**(22) AWB 2 adjustment**

- Test point : TV12, TV13
- Test equipment : Oscilloscope (Trigger: TH03)
- Adjusting point : RA50, RA51
- Adjusting item : Minimum carrier leakage

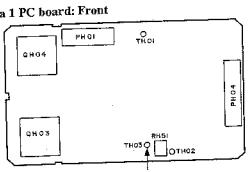
1) Set the color temperature selector to the ☼ position.
2) Attach the C16 color temperature conversion filter to the lens.
3) Point the camera to the gray scale chart and display it on the whole screen.
4) Observe waveform at TV12 on channel 1 of the oscilloscope, and TV13 on channel 2. (Set channels 1 and 2 to the same vertical range.)
5) Set the oscilloscope to ADD mode and add the signal on channel 1 to that on channel 2.
6) Adjust RA50 and RA51 alternately so that the carrier leakage of the added signal is minimum.
7) If the oscilloscope is not provided with the ADD mode, observe waveform at TV12 and adjust RA50 and RA51 alternately so that the carrier leakage is minimum.



**Auto white balance**
**PC board: Rear**



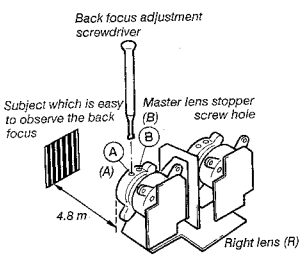

**Camera 1 PC board: Front**



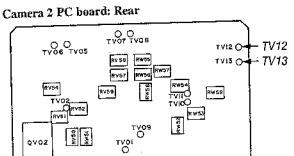

**(23) Back focus adjustment**

- Test point :
- Test equipment : Color video monitor
- Adjusting point : Back focus adjustment lens
- Adjusting value : Best value

1) Keep the lens 4.8 m away from the subject.
2) Reduce the illumination so that the iris is open.
3) Set the unit to the MONO L mode.
4) Loosen the master lens stopper (B). Insert the back focus adjustment screwdriver to (A) and turn it until the correct focus is obtained on the TV monitor screen.
5) Tighten the master lens stopper screw and check that the correct focus is obtained.
6) Set the unit to the MONO R mode and perform 4) and 5) adjustments.




**Camera 2 PC board: Rear**



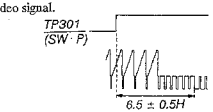
## 5-2. Electrical Adjustment of Deck Section

### 5-2-1. Servo Circuit

**(1) Playback switching position**

- Test point : TP301 (on Mother 2), TP303 (on Mother 2)
- Test equipment : Oscilloscope
- Adjusting point : R550 (on Mother 1)
- Adjusting item :

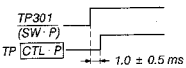
1) Play back the stairstep signal on the ST-CN1 alignment tape.
2) Connect the oscilloscope to TP303 (VIDEO OUT) and trigger the scope with SW pulse at TP301.
3) Adjust R550 to position the rising edge of the SW pulse at 6.5±0.5H from the V-sync front edge of the video signal.




**(2) Tracking preset**

- Test point : TP301 (on Mother 2), TP CTL·P (on Mother 1)
- Test equipment : Oscilloscope
- Adjusting point : R552 (on Mother 1)
- Adjusting item :

1) Set the tracking control to the center click position.
2) Play back the staristep signal on the ST-CN1 alignment tape.
3) Connect the oscilloscope to TP CTL·P and trigger the scope with SW pulse at TP301 and adjust R552 as shown below.

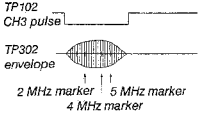



### 5-2-2. Video Circuit

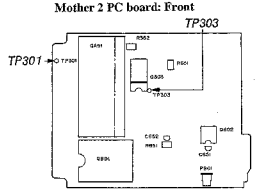
**(1) Playback frequency response**

- Test point : TP302
- Test equipment : Oscilloscope
- Adjusting point : R351
- Adjusting item : Set to the same level at 2 MHz and 5 MHz.
- Note : Playback of the ST-CN1 alignment tape

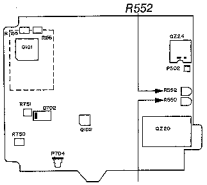
1) Play back the RF sweep signal on the ST-CN1 alignment tape.
2) Connect a probe to envelope test pin TP302 on M2 PC board.
3) Connect a probe to CH3 pulse test pin TP102 on M1 PC board. Trigger with this signal and observe the playback waveform of the RF sweep signal.
4) Adjust R351 so that the level is almost the same at 2 MHz and at 5 MHz in TP302 envelope.



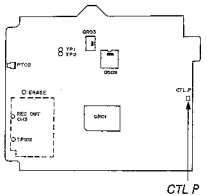

**Mother 2 PC board: Front**



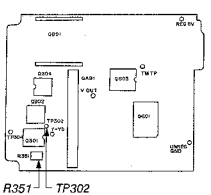

**Mother 1 PC board: Front**




**Mother 1 PC board: Rear**




**Mother 2 PC board: Rear**

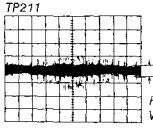


**(2) Y comb filter balance**

(This adjustment is not necessary when replacing the M2 unit, as it is fully adjusted for each unit.)

- Test point : Y-YD
- Test equipment : Oscilloscope
- Adjusting point : R352
- Adjusting item : Minimum difference signal amplitude
- Note : SP mode

1) Play back the color bar signal on the ST-CN1 alignment tape in SP mode.
2) Connect the oscilloscope to Y-YD and display a waveform of approx. 2 H.
3) Trigger the oscilloscope at VIDEO OUT.
4) Adjust R352 so that the amplitude of the difference signal is minimum.

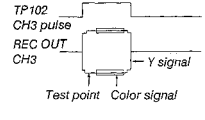



**(3) Recording Y (luminance) level**

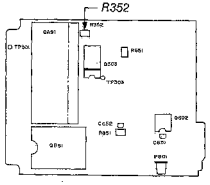
(This adjustment is not necessary when replacing the M1 unit, as it is fully adjusted for each unit.)

- Test point : REC OUT CH3
- Test equipment : Oscilloscope
- Adjusting point : R156
- Adjusting level : 2.60 ± 0.1Vp-p
- Note : Recording mode

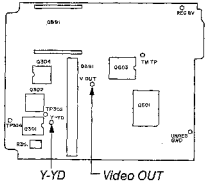
1) Input the separated Y and C signal components of the color bar signal from W302 using the YC separation jig (or shooting the color chart).
2) Set the unit to recording mode.
3) Remove the preamplifier shield cover on M1 PC board.
4) Connect a probe to REC OUT CH3 of M1 PC board. Trigger with CH3 pulse at TP102 on M1 PC board and observe the recording voltage waveform at REC OUT CH3.
5) At the obtained recording voltage, adjust R156 so that 2.6 ± 0.1 Vp-p is obtained at the point shown below.



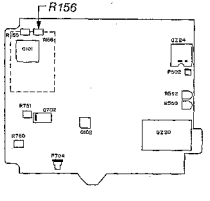

**Mother 2 PC board: Front**



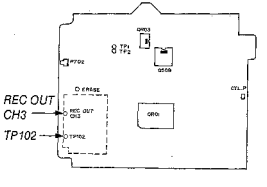

**Mother 2 PC board: Rear**




**Mother 1 PC board: Front**




**Mother 1 PC board: Rear**

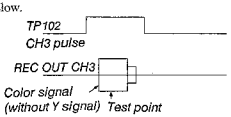


**(4) Recording C (color) level**

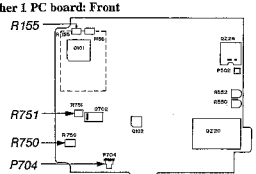
(This adjustment is not necessary when replacing the M1 unit, as it is fully adjusted for each unit.)

- Test point : REC OUT CH3
- Test equipment : Oscilloscope
- Adjusting point : R155
- Adjusting level : 110 ± 10 mVp-p
- Note : Recording mode

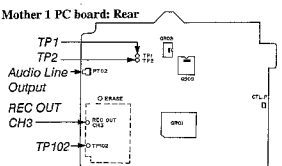
1) Input the separated Y and C signal components of the color bar signal to W302 using the Y/C separation jig (or shooting the color chart).
2) Set the unit to recording mode.
3) Short-circuit between base Q313 on M2 PC board and the ground.
4) Remove the preamplifier shield cover on M1 PC board.
5) Connect a probe to REC OUT CH3 on M1 PC board. Trigger with CH3 pulse at TP102 on M1 PC board and observe the recording voltage waveform at REC OUT CH3.
6) At the obtained recording voltage, adjust R155 so that 110 ± 10 mVp-p is obtained at the point shown below.




**Mother 1 PC board: Front**




**Mother 1 PC board: Rear**




## 5-2-3. Audio Circuit

**Preparations:**

1. The playback output level adjustment may not be performed if the audio/control head is not correctly positioned to the head.
   Perform the adjustment after completion of the azimuth adjustment and height adjustment.
2. Terminate the audio (line) output terminal at 47 k ohm.

**(1) Playback output level**

- Test point : Audio (line) output terminal
- Test equipment : Millivoltmeter
- Tape and signal : ST-CN1, 1 kHz (color bar)
- Mode and recording switch setting : Playback (PLAY), SP mode
- Adjusting point : R750
- Adjusting level : -7 ± 0.5 dBs

1) Connect the millivoltmeter to the audio (line) output terminal and play back the ST-CN1 alignment tape (1 kHz, color bar).
2) Adjust R750 so that the output level is -7.0 dBs ± 0.5 dBs.

**(2) Record/Erase oscillator frequency**

- Test point : Pin 1 of P704 ERASE
- Test equipment : Frequency counter
- Tape and signal : Blank tape, no signal input
- Mode and recording switch setting : Recording (REC), SP mode
- Adjusting point : ———
- Adjusting item : Check the frequency (f) 55 kHz ± 10 %.

1) Remove the microphone unit to open-circuit the BGM input terminal and feed no input signal.
2) Set the unit to recording mode and check the frequency (f).

**(3) Bias current**

- Test point : TP1 and TP2
- Test equipment : Millivoltmeter
- Tape and signal : Blank tape, no signal input
- Mode and recording switch setting : Recording (REC), SP mode
- Adjusting point : R751
- Adjusting level : 2.2 ± 0.1 mVrms

1) Remove the microphone unit to open-circuit the BGM input terminal and feed no input signal.
2) Connect the HOT side of the voltmeter to TP-2 and the ground to test pin TP-1.
3) Adjust R751 to 2.2 ± 0.1 mV/rms. When using a oscilloscope, adjust to 6.2 mVp-p ± 0.3 mV (2√2 times).

**(4) Recording/playback frequency response in SP mode**

- Test point : Audio (line) output terminal
- Test equipment : Millivoltmeter
- Tape and signal : Blank tape, 1 kHz, 10 kHz (-30 dBs)
- Mode and recording switch setting : Recording (REC) , Playback (PLAY), SP mode
- Adjusting point : ———
- Adjusting item : Check 0 dB ± 4 dB.

1) Input the 1 kHz and 10 kHz signals at -30 dBs to the L and R BGM input terminals (L and R) and record the signals.
2) Play back the recorded signal and check that 1 kHz output is 0 dB ± 4 dB, reffered to 10 kHz output.

**(5) Recording/playback frequency response in EP mode**

- Test point : Audio (line) output terminal
- Test equipment : Millivoltmeter
- Tape and signal : Blank tape, 1 kHz, 5 kHz (-30 dBs)
- Mode and recording switch setting : Recording (REC), Playback (PLAY), EP mode
- Adjusting point : ———
- Adjusting item : Check -2 dB ± 7 dB.

1) Input the 1 kHz and 5 kHz signals at -30 dBs to the BGM input terminals (L and R) and record the signals.
2) Play back the recorded signal and check that 1 kHz output is -2 dB ± 7 dB, reffered to 5 kHz output.

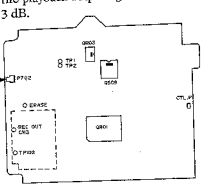
**(6) Recording/playback output level**

- Test point : Audio (line) output terminal
- Test equipment : Millivoltmeter
- Tape and signal : Blank tape, 1 kHz (-10 dBs)
- Mode and recording switch setting : Recording (REC), Playback (PLAY), SP mode
- Adjusting point : ———
- Adjusting item : Check -7.5 dBs ± 3 dB.

1) Input the 1 kHz signal at -10 dBs to the BGM input terminals (L and R) and record and play back the signal.
2) Check that the playback output signal is -7.5 dBs ± 3 dB.

**Mother 1 PC board : Rear**

*Audio Line Output P702*



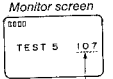

**5-2-4. Logic Circuit**

**(1) Battery alarm**

- Test point : UNREG +B (voltage between pin 1 and pin 2 of P801 on Mother 2 PC board).
- Test equipment : Test mode jig
- Adjusting point : R651 (on Mother 2 PC board)

1) Set the test mode jig to TEST 5 mode.
2) Observing the control volume reading displayed on the monitor screen (see figure below), adjust R651 so that the unregulated +B value shown in the table is obtained.

*Monitor screen*




*Control volume reading*

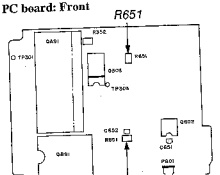
**(2) Regulator 8 V**

- Test point : REG 8 V, UNREG GND
- Test equipment : DC voltmeter
- Adjusting point : R851 (on Mother 2 PC board)

1) Connect the DC voltmeter between REG 8V and REG GND and adjust R851 so that the voltmeter reading is 8.0 ± 0.1 V.

**Mother 2 PC board: Front**

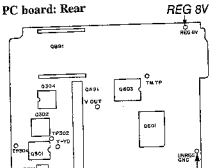
*R651*




*R851 P801*

**Mother 2 PC board: Rear**

*REG 8V*




*UNREG GND*

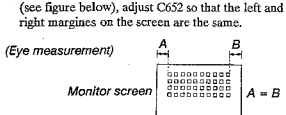
**Control volume reading and corresponding unregulated +B**

| Control volume reading (Displayed on monitor screen) | Unregulated +B value (M2) |
|---|---|
| 108 | 9.01 – 9.09V |
| 109 | 9.09 – 9.17V |
| 110 | 9.17 – 9.25V |
| 111 | 9.25 – 9.34V |
| 112 | 9.34 – 9.42V |
| 113 | 9.42 – 9.50V |
| 114 | 9.50 – 9.59V |
| 115 | 9.59 – 9.67V |
| 116 | 9.67 – 9.76V |
| 117 | 9.76 – 9.84V |
| 118 | 9.84 – 9.93V |
| 119 | 9.93 – 10.01V |
| 120 | 10.01 – 10.09V |
| 121 | 10.09 – 10.18V |
| 122 | 10.18 – 10.26V |
| 123 | 10.26 – 10.35V |
| 124 | 10.35 – 10.43V |
| 125 | 10.43 – 10.51V |
| 126 | 10.51 – 10.60V |
| 127 | 10.60 – 10.68V |
| 128 | 10.68 – 10.77V |
| 129 | 10.77 – 10.85V |
| 130 | 10.85 – 10.93V |
| 131 | 10.93 – 11.02V |

**(3) Character generator oscillator frequency**

- Test equipment : Monitor screen, Test mode jig
- Adjusting point : C652

1) Set the test mode jig to TEST 6 mode.
2) Observing the test characters displayed on the screen (see figure below), adjust C652 so that the left and right margines on the screen are the same.




**(4) Timer oscillator frequency**

- Test point : TM TP, GND
- Test equipment : frequency counter
- Adjusting point : C651

1) Make sure that the ambient temperature is 22°C to 28°C.
2) Connect the frequency counter between test point TM TP and the ground and adjust C651 so that the counter reading is between 63.99990 and 64.00010 (Hz).

**Note:**
When the ambient temperature is except for 22°C to 28°C range, adjust the reading reffering to the table below.

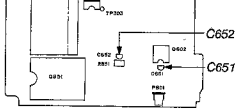
**For adjusting the timer oscillator frequency**

| | Temperature during adjustment | Frequency to be adjusted (error range = ±0.0001 Hz) |
|---|---|---|
| | 0°C | 63.99870 |
| | 2 | 63.99890 |
| | 4 | 63.99910 |
| | 6 | 63.99920 |
| | 8 | 63.99940 |
| | 10 | 63.99950 |
| | 12 | 63.99970 |
| | 14 | 63.99980 |
| | 16 | 63.99980 |
| | 18 | 63.99990 |
| Temperature range to allow adjustment | 20 | 63.99990 |
| | 22 | 64.00000 |
| | 24 | 64.00000 |
| | 26 | 64.00000 |
| | 28 | 64.00000 |
| | 30 | 63.99990 |
| | 32 | 63.99990 |
| | 34 | 63.99980 |
| | 36 | 63.99980 |
| | 38 | 63.99970 |
| | 40 | 63.99950 |
| | 42 | 63.99940 |
| | 44 | 63.99920 |
| | 46 | 63.99910 |
| | 48 | 63.99890 |

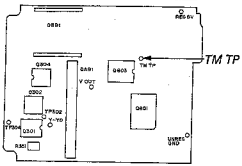
**Notes:**

1. Perform the adjustment when the temperature near the cradle is between 14°C and 36°C. The adjustment is possible within this range of temperatures.
2. If the adjustment should perform where the temperature is beyond this range, be sure to adjust the frequency as shown in the table above.

**Mother 1 PC board : Front**




**Mother 2 PC board : Rear**



# SECTION 3
# SERVICING DIAGRAMS

## 1. INSPECTION PROCEDURES

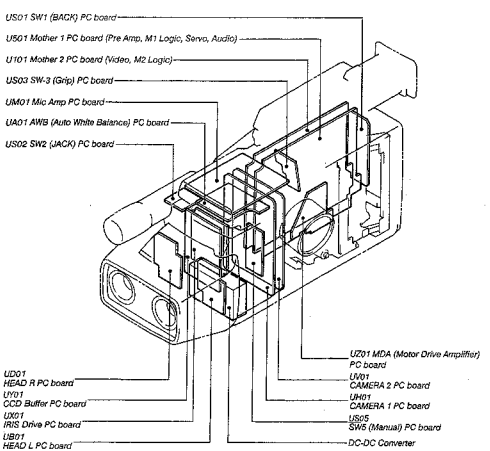
| Operation steps | | Items to be confirmed | Inspection blocks | Page: Block diagram | Page: Circuit diagram |
|---|---|---|---|---|---|
| 1. Power switch ON | Check the corresponding items. | 1. The power lamp lights (on the rear).<br>2. The picture being shooted (RE picture) is displayed in the EVF. (Note: After Power switch ON, the 3D mode is set.) | Camera 1, 2<br>IRIS DRIVE<br>CCD BUFFER<br>HEAD L, R<br>Video<br>EVF | 3-12<br>3-12<br>3-12<br>3-12<br>3-27 | 3-51,57<br>3-43<br>3-47<br>3-38,40<br>3-77 |
| 2. Auto white balance (AWB) | 1. Shoot the gray scale chart under halogen lamps.<br>2. Open the ONE TOUCH AUTO DOOR and press the white balance button, and check that the following mode indications appear in the E.V.F.<br>: indoor mark,<br>: fluorescent light,<br>: outdoor mark<br>no indication<br>3. Use two color temperature conversion filters "C8" and check the corresponding items. | White balance is set as follows:<br>Indication in EVF / Filter: Provided / Not provided<br>None: Good / Good<br>: Bluish / Good<br>: —— / Reddish<br>: Good / Reddish | IRIS DRIVE<br>CCD BUFFER<br>HEAD L, R<br>Camera 1, 2<br>Auto white balance (AWB)<br>M2 logic | 3-12<br>3-12<br>3-12<br>3-12<br>3-12<br>3-21 | 3-43<br>3-47<br>3-38,40<br>3-51,57<br>3-35<br>3-80 |
| 3. Cassette-in and cassette-out | Insert a cassette and press the REC start/REC pause button. Press the eject button. | Cassette loading<br>Cassette eject<br>Abnormal sound | Logic | 3-21 | 3-63,80 |
| 4. Key entry operation | REC start/REC pause, eject, stop, playback, FF, REW, REC REVIEW, pause, record, self timer,interval recording (remote control). | 1. Mode indication in the EVF<br>2. Correct operation in each mode<br>3. Abnormal sound | Logic | 3-21 | 3-63,80 |
| 5. Tape remaining display | Play back a tape, and the tape remaining will be indicated after 10 seconds. | The following indication appears in the EVF<br>TAPE —> —> —><br>(One arrow indicates approx. 5 min.) | Logic | 3-21 | 3-80 |
| 6. Special functions<br>Tape end detection (Tape end) | When the tape reaches the end after travelling in normal direction during recording, playback or in other modes (except fast forward mode), check the corresponding items. | 1. The tape stops on battery operation.<br>2. The tape is rewound when the AC adaptor is used. | Logic<br>Servo | 3-21<br>3-24 | 3-80<br>3-66 |

| Operation steps | | Items to be confirmed | Inspection blocks | Page | |
|---|---|---|---|---|---|
| | | | | Block diagram | Circuit diagram |
| 7. Playback quality Picture quality, sound quality, etc. | 1. Play back the alignment tape ST-CN1.<br>2. Set to playback, cue, review and still picture mode. | Resolution, S/N, hue, saturation, color unevenness, color dropout, sound distortion, level variation, picture noise, jitter, picture swing, skew distortion, flicker, beat | Video<br>Audio<br>Servo | 3-27<br>3-30<br>3-24 | 3-77<br>3-70<br>3-66 |
| 8. Recording playback quality Picture quality, sound quality, etc. | Recording/playback | Resolution, S/N, hue, saturation, color unevenness, color dropout, sound distortion, level variation, picture noise, jitter, picture swing, skew distortion, flicker, beat | Video<br>Audio<br>Servo<br>Camera | 3-27<br>3-30<br>3-24<br>3-12 | 3-77<br>3-70<br>3-66<br>3-51,57 |

How to Use the Table

1. When inspecting a defective Video movie, proceed according to the steps shown in the table.
2. Check the items to be confirmed for each operation steps.
3. If a problem is found on an item, check waveforms (or level) reffering to the block diagram relating to the item.
4. Use the PC board pattern diagrams and schematic diagram to examine the circuit precisely.
5. After completion of the repair work, check steps 1 to 8 again.

## 2. LOCATION OF ELECTRICAL UNITS


US01 SW1 (BACK) PC board
U501 Mother 1 PC board (Pre Amp, M1 Logic, Servo, Audio)
U101 Mother 2 PC board (Video, M2 Logic)
US03 SW-3 (Grip) PC board
UM01 Mic Amp PC board
UA01 AWB (Auto White Balance) PC board
US02 SW2 (JACK) PC board
UD01 HEAD R PC board
UY01 OCD Buffer PC board
UX01 IRIS Drive PC board
UB01 HEAD L PC board
UZ01 MDA (Motor Drive Amplifier) PC board
UA01 CAMERA 2 PC board
UH01 CAMERA 1 PC board
US05 SW5 (Manual) PC board
DC-DC Converter

## 3. PART CONFIGURATION AND THEIR SYMBOLS

1. ICs

| NAME | SHAPE |
|---|---|
| TMP47C860F<br>TMP47C860F | |
| TC6001F<br>BU3721K | |
| M51459FP | |
| TC6006F | |
| HA11B010MP | |
| BU3756K | |
| HA11844MP | |
| AN2110S<br>M589012-104<br>BA6452F<br>TA8607F | |
| BA7751ALS | |

| NAME | SHAPE |
|---|---|
| M5197F<br>VC5026G<br>UPD6146G | |
| TCD215C | |
| AN2020S | |
| HA11883MP | |
| TC4053BF<br>TC4049BF<br>TL8708F<br>TC74HC4050F | |
| AN2010S<br>UPD4999AG | |
| DX0043 | |
| TC4066BF<br>TC74HC86F<br>TC74HCU04F<br>HD14013P<br>HD14069P | |
| UPC324G2<br>TA75339F<br>M51798FP | |

| NAME | SHAPE |
|---|---|
| TC4013BF | |
| M54543L | |
| EXA615 | |
| TA7357P | |
| NJM386M,NJM2210X<br>NJM3414M,MSM6384<br>TA75559F<br>NJM4556D<br>AN6306S<br>UPC359C2 | |
| UPC358C<br>UPC393C | |
| PU59824 | |
| TC4S584F | |
| TC4S66F | |

| NAME | SHAPE |
|---|---|
| BA7755 | |
| TA78L015<br>S-8052ALY<br>S-81250HG | |
| UPC78L05J | |

## 2. TRANSISTORs

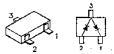
| | |
|---|---|
| 2SC1815-Y | |
| 2SK903 | |
| UN421D | |
| RN2202<br>RN2204<br>RN1204 | |
| 2SA1213Y<br>2SA1203Y | |

| NAME | SHAPE |
|---|---|
| RN2402,RN2403,2SA1586-G<br>RN2404,2SA1362GR,UN5212<br>RN2406,UN5111,UN2210<br>UN5211,UN5213,2SC3326B<br>2SK209Y,UN5113,2SA1162Y<br>2SA1022-C,RN1402,2SC3326A<br>RN1404 , 2SC2714Y<br>2SC4116-Y,2SC2884-Y<br>2SC2712Y , 2SA1586-Y | |
| XN4501 | |
| XN4601 | |
| XN5501 | |
| XN8501 | |
| XN1501<br>XN1212 | |
| XN2501 | |
| 2SK209GR | |

| NAME | SHAPE |
|---|---|
| 2SC2982C | |

## 3. DIODEs

| | |
|---|---|
| RH-DX014CE2Z | |
| MA165<br>ERA15-01 | |
| DOQS03 | |
| ERA22-02<br>ERA22-06 | |
| ERC90M02 | |
| ERB81-004 | |
| SIM-20ST | |

| NAME | SHAPE |
| --- | --- |
| 1SS226<br>1SS184<br>1SS181 |  |
| 1SS187 | |
| MA111 | |
| MA121 | |
| MA-151WK<br>1SS301 | |
| MA3047 | |
| TLUR123<br>PX0023A | |
| S1WBA60 | |
| MA175WA | |

| NAME | SHAPE |
| --- | --- |
| 1SS193<br>RD9.1M<br>02CZ7.5X | |
| RH-EX0168GEZZ<br>RH-EX0134GEZZ | |

## 4. PRECAUTIONS FOR PART REPLACEMENT

* In the schematic diagram, parts marked (ex. F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replaceing them.
* Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire, etc.

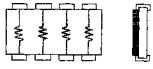
## 5. SOLID RESISTOR INDICATION

| Resistor | Symbol |
|---|---|
| 1/20 W chip | None |
| P-type film | P |
| U-type film | U |
| Solid | S |
| Oxide film | R |
| Metal film | W |
| Cement | W |
| Fuse | RF |

| Tolerance | Symbol |
|---|---|
| ±2% | G |
| ±5% | J |
| ±10% | None |
| ±20% | None |

- No symbols are indicated for chip resistors and oxide resistors, because they are used ±5%.

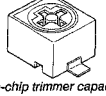
*WNR14 (chip network resistor)*



## 6. CAPACITOR INDICATION

| Description | Symbol | Capacitance and unit | Capacitance allowance |
|---|---|---|---|
| Electrolytic | | | None |
| Special electrolytic | | μF | Indicated |
| Plastic film | | μF: indicated with numbers below decimal point | Indicated below ±5%(J). |
| Ceramic | | | Indicated below ±0.5PF. |
| | | PF: indicated with numbers over decimal point | Not indicated for others |
| Trimmer | | PF. | None |

Note: No rated voltage is indicated for capacitors rated at 50 V except electrolytic capacitors.



*Ceramic-chip trimmer capacitor*

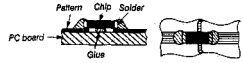
## 7. CHIP PARTS

- Chip parts are used in some resistors, short jumpers (0-ohm resistor), ceramic capacitors, transistors, diodes and variable resistors. These chip parts cannot be reused once they have been removed.

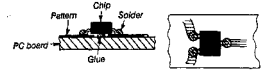
- On Chip Part Replacement
  Replace a chip part as follows.
  Use a soldering iron with a thin tip having a high isolation (260 to 30°C, approx. 17 W). It is advisable to use a soldering iron equipped with a solder absorber (approx. 55 W).

**[1] Chip part mounting**

- **Resistor, capacitor, etc.**



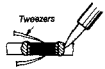

- **Transistor, diode, etc.**




**[2] Removing the chip part**

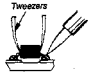
- **Resistor, capacitor, etc.**
  (1) Melt the solder at one side.

  (2) Hold the chip part with tweezers and melt the solder at the other side.




  (3) Twist and slide to remove the chip part.

- **Transistor, diode, etc.**
  (1) Melt the solder at one-pin side.




  (2) Lift the side of that pin upward.

(3) Heat the other two pins simultaneously and lift part to remove.

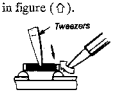
**[3] Pre-heating and soldering the chip part**

Before soldering any chip part except a transistor, especially a capacitor, be sure to pre-heat it for about 2 minutes with hot air of approx. 150°C (using a hair dryer or similar), and immediately solder it with an soldering iron of about 30 W.

**[4] Mounting the chip part**

(1) Place solder on the pattern in advance.

(2) Hold the chip part with tweezers, press it down in the direction of the arrow (↓), and solder it with a soldering iron from the direction shown in figure (⇧).




**Notes:**

- Do not heat the chip part for more than 3 seconds.
- Do not touch the electrode.
- Do not reuse the removed chip part.
- Glueing is not necessary.

**8. WAVEFORM AND VOLTAGE MEASUREMENT**

- The waveforms and voltage values shown in each section of the color circuit are those obtained when the service color bar signal is received with a sufficient sensitivity and reproduced in normal conditions.

- The waveforms and voltage values shown for the other circuits are measured with broadcasting signal normally received, so they may vary slightly according to the programs being received. Use as a guide for servicing.

**9. CHIP PART REPLACEMENT**

(Use spare part with wire leads connected.)

(1) Hold a Chip part to be removed with tweezers and apply heat to the solder at one end of the part with a soldering iron. (Fig. 1)

(2) Apply heat to the solder at the other end of the part and remove it.
The heating time should be as short as possible so the excessive heat is not applied to foil patterns and the PC Board.

(3) If it is difficult to remove the part, temporarily stop the desoldering job and wait until temperature of the part lowers. Then, repeat steps 1 and 2.

(4) From leads of the replacement part (general part equivalent to the chip part) as shown in the figures and solder place. (Fig. 2)

(5) Mount the replacement part so that it does not touch any other parts. (Fig. 3)

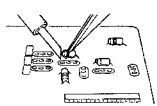


Fig-1

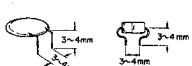



Fig-2

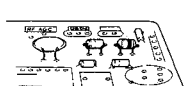
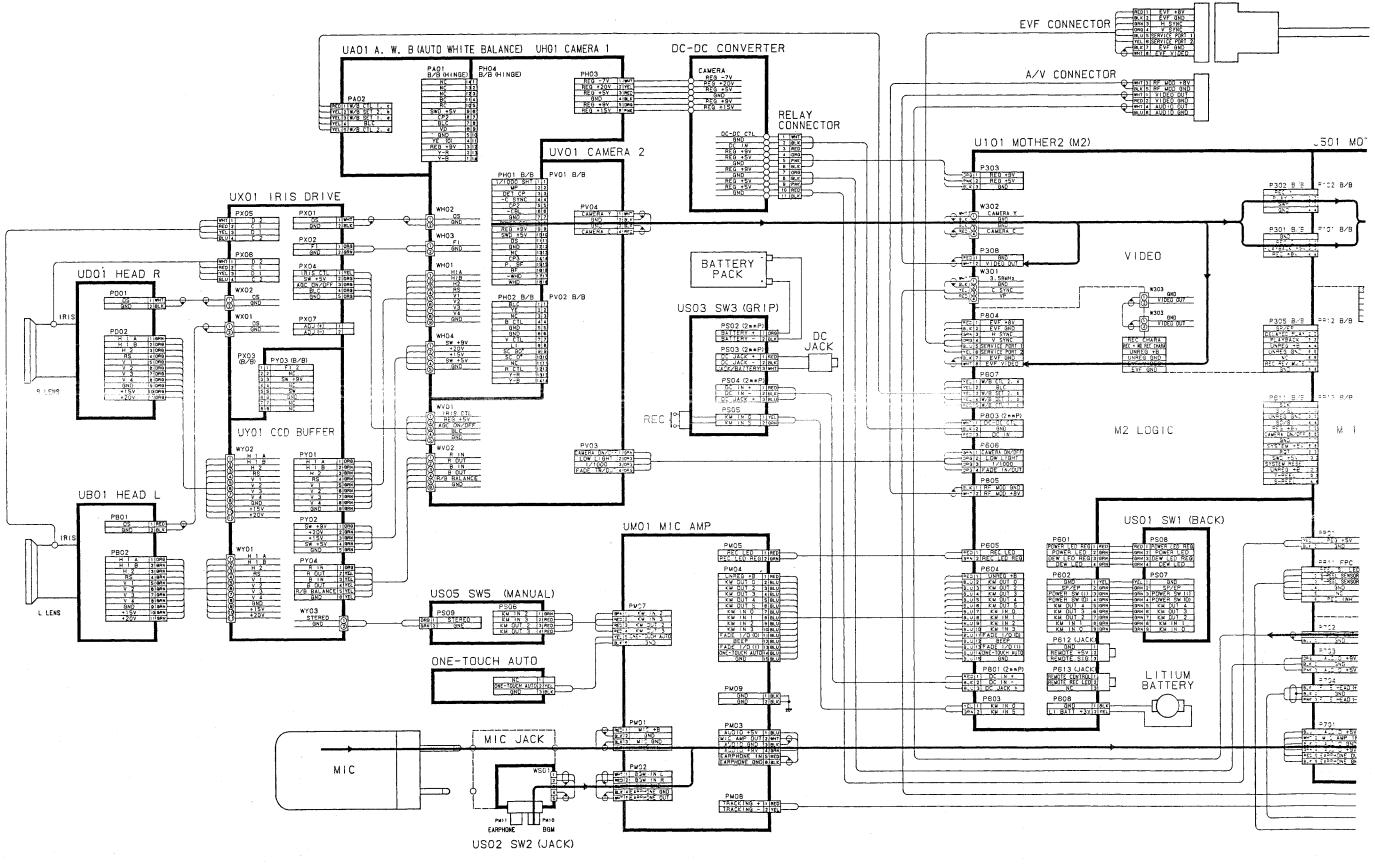
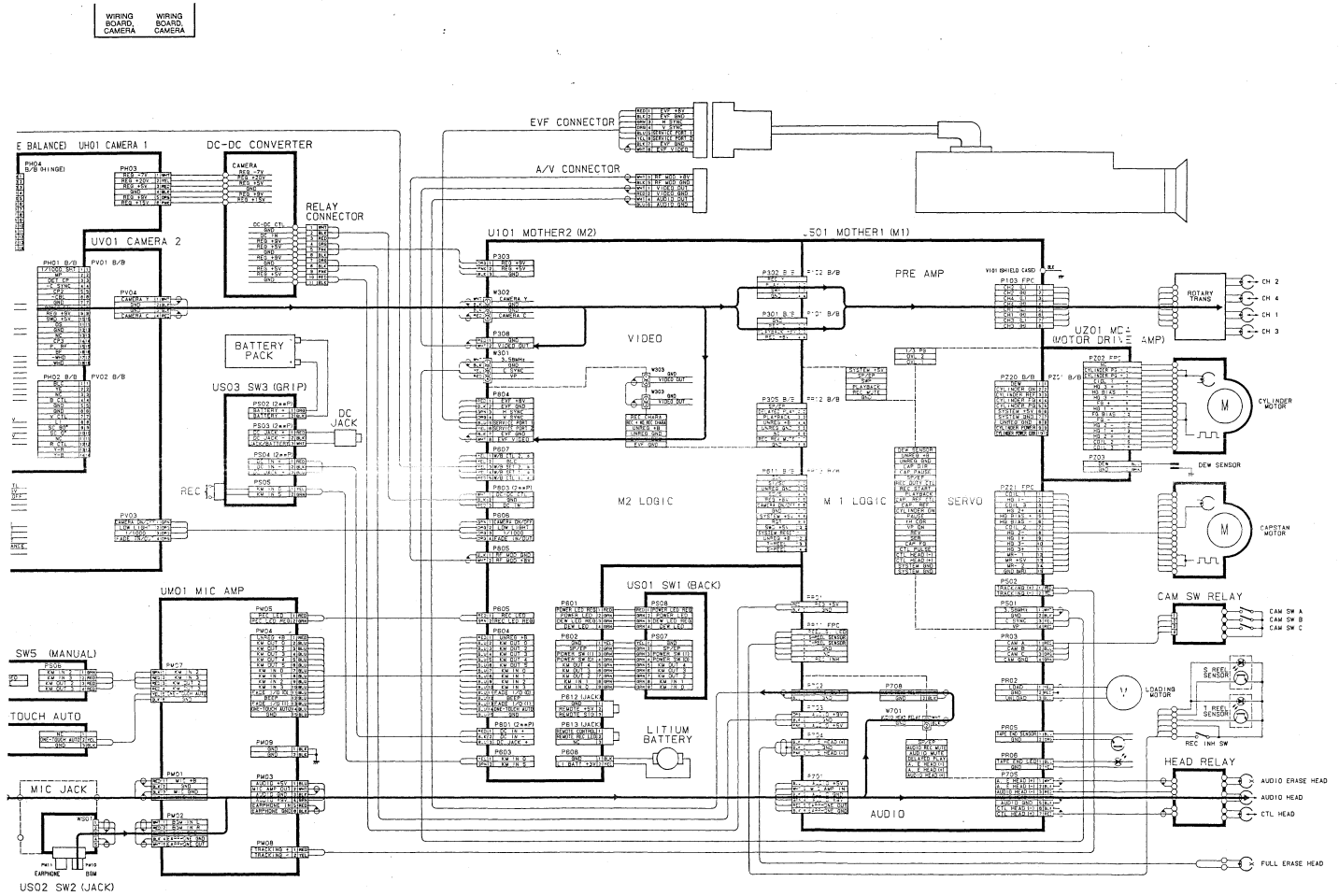


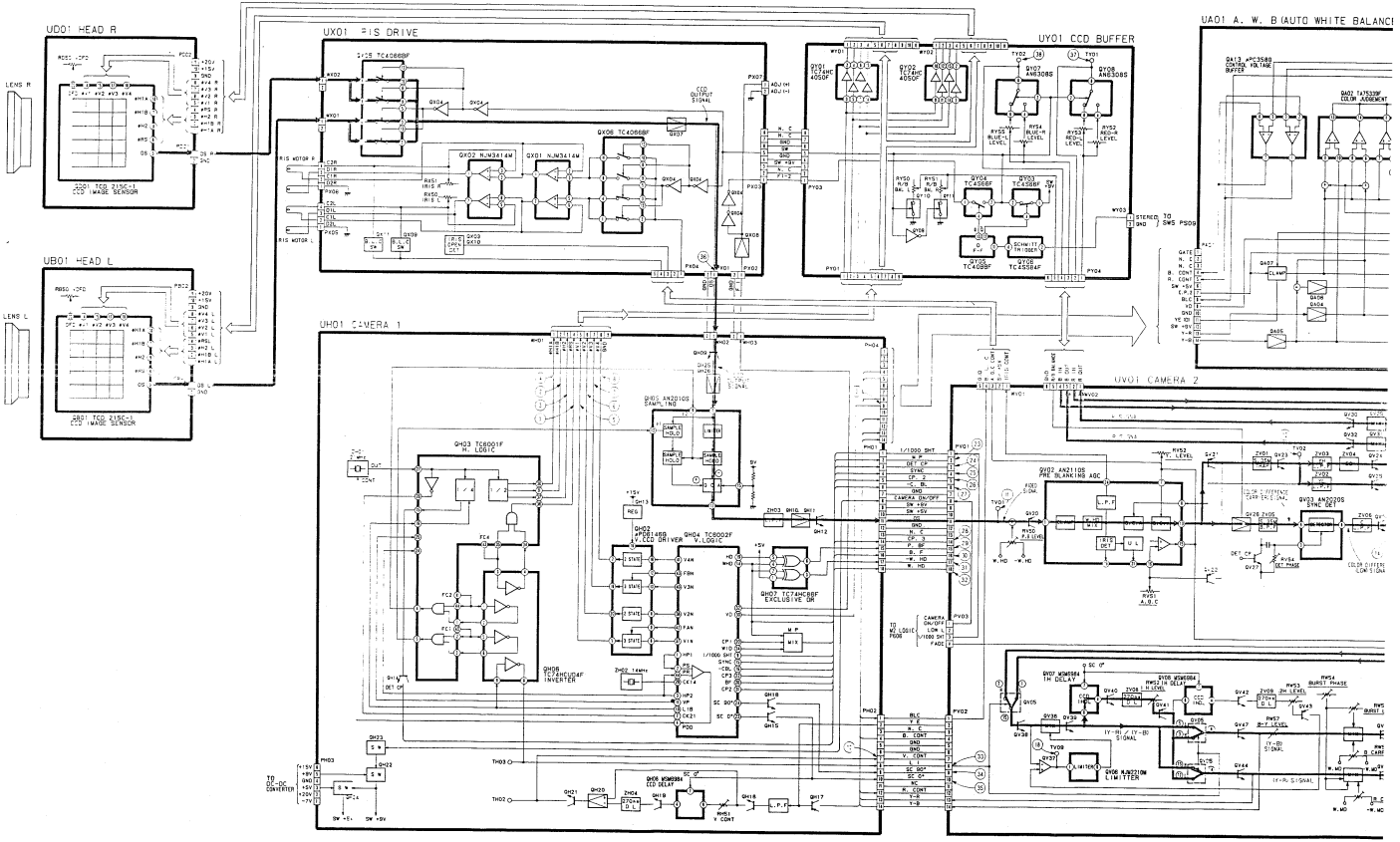
Fig-3

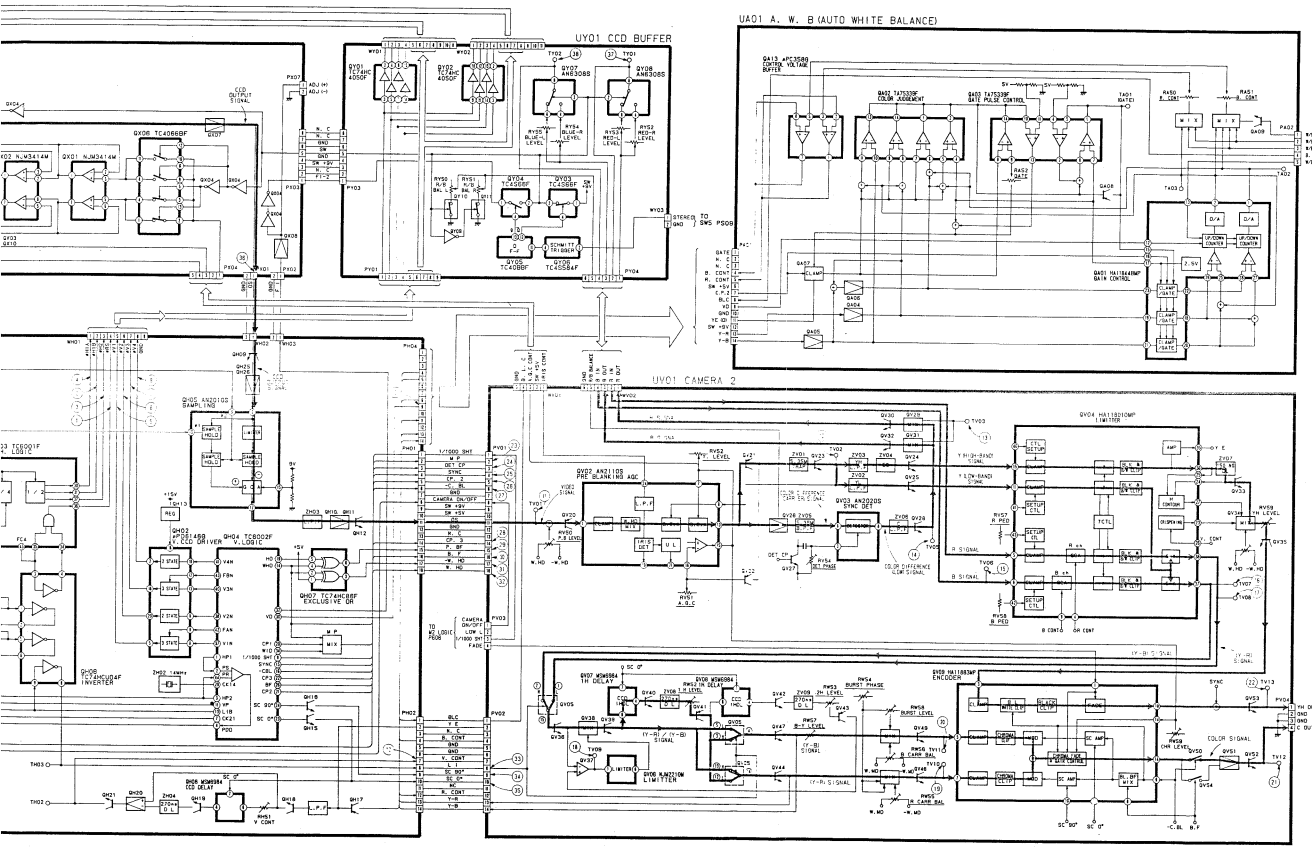
## 4. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

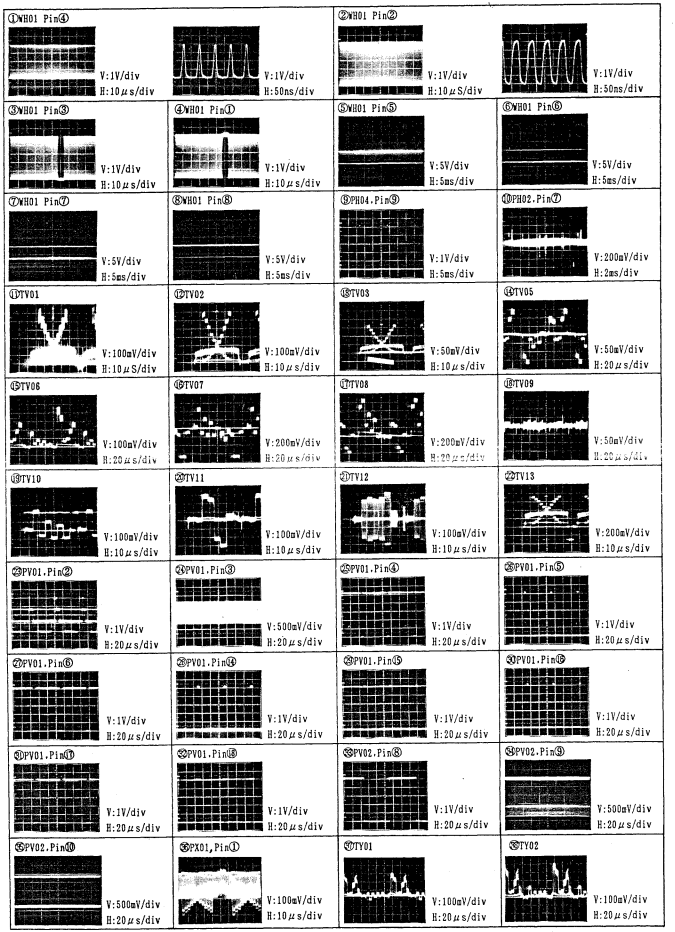



WIRING BOARD, CAMERA
WIRING BOARD, CAMERA
E BALANCE) UH01 CAMERA 1
DC-DC CONVERTER
RELAY CONNECTOR
UV01 CAMERA 2
BATTERY PACK
US03 SW3 (GRIP)
DC JACK
REC
UM01 MIC AMP
SW5 (MANUAL)
TOUCH AUTO
MIC JACK
US02 SW2 (JACK)
EVF CONNECTOR
A/V CONNECTOR
U101 MOTHER2 (M2)
U501 MOTHER1 (M1)
PRE AMP
VIDEO
M2 LOGIC
M 1 LOGIC
SERVO
AUDIO
US01 SW1 (BACK)
LITIUM BATTERY
UZ01 MCA (MOTOR DRIVE AMP)
ROTARY TRANS
CH 2
CH 4
CH 1
CH 3
CYLINDER MOTOR
DEW SENSOR
CAPSTAN MOTOR
CAM SW RELAY
CAM SW A
CAM SW B
CAM SW C
LOADING MOTOR
S REEL SENSOR
T REEL SENSOR
REC INH SW
HEAD RELAY
AUDIO ERASE HEAD
AUDIO HEAD
CTL HEAD
FULL ERASE HEAD

## 5-1. CAMERA BLOCK DIAGRAM

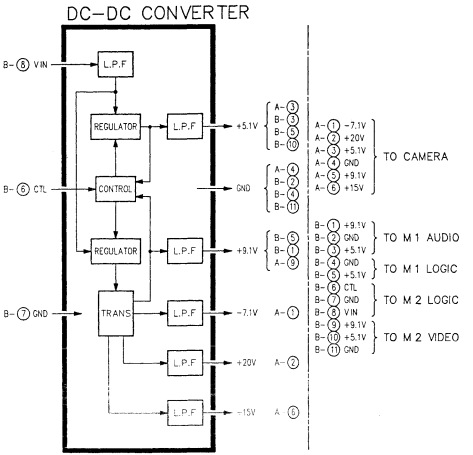



UAO1 A. W. B (AUTO WHITE BALANCE)
UYO1 CCD BUFFER
UYO1 CAMERA 2






## 6. DC-DC CONVERTER BLOCK DIAGRAM




### LOGIC MODE SHIFT TABLE

| Current mode \ Input mode | Start/stop | ▲ Eject | ■ Stop | ▶ Playback | ▶▶ FF | ◀◀ REW | Rec. Review | ●II Pause | ● Recording | Self-timer | Interval rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cassette holder closing | – | o | – | – | – | – | – | – | – | – | – |
| Stop | o | o | – | o | o | o | – | – | o | – | – |
| FF | – | o | o | o | – | o | – | – | – | – | – |
| REW | – | o | o | o | o | – | – | – | – | – | – |
| Playback | – | o | o | – | o | o | – | o | – | – | – |
| Cue | – | o | o | o | – | o | – | – | – | – | – |
| Review | – | o | o | o | o | – | – | – | – | – | – |
| Still | o | o | o | – | – | – | – | o | – | – | – |
| Record pause | o | o | o | – | – | – | o | o | o | o | o |
| Self-timer ON | o | – | o | – | – | – | – | o | – | o | – |
| Self-timer pause | – | – | o | – | – | – | – | – | – | o | – |
| Interval ON/pause | o | – | o | – | – | – | – | o | – | – | o |
| Recording | o | – | o | – | – | – | – | o | – | – | – |
| Self-timer start | o | – | o | – | – | – | – | o | – | – | – |
| Interval rec. start | – | – | o | – | – | – | – | – | – | – | – |
| Rec. Review | – | – | o | – | – | – | – | – | – | – | – |

Note : O Directly shifted to the specified mode.
– Not shifted.



### TERMINAL

QR01 TMP47

| Pin No. | Port |
|---|---|
| 5 | LOAD |
| 6 | UN LOAD |
| 7 | LOAD POWER |
| 8 | CYLINDER SEL |
| 9 | SER |
| 10 | REV |
| 11 | VP ON |
| 12 | FH |
| 13 | PAUSE |
| 14 | FF/REW MODE |
| 15 | SERVO RESET |
| 16 | CYLINDER ON/( |
| 17 | A |
| 18 | B |
| 19 | C |
| 20 | REF D |
| 21 | REF CTL |
| 22 | SERVO PB |
| 23 | SERVO REC |
| 24 | REC DUTY |
| 27 | CAP OPF |
| 28 | CAP FWD |
| 29 | CAP PAUSE |
| 30 | SP/EP |
| 31 | AUDIO MUTE |
| 32 | REC-MUTE |
| 33 | D-PB |
| 34 | PB |
| 35 | AUDIO REC MUT |
| 36 | REC-REV MUTE |
| 37 | VIDEO S/N SEL |
| 38 | AUDIO S/N SEL |
| 95 | CAMERA ON/OF |

Q601 TMP47C860F2834Z

| Pin | Name | I/O |
|---|---|---|
| 1 | DATCHG | I |
| 2 | Not used | |
| 3 to 8 | KM00 – KM05 | O |
| 9 to 12 | KM10 – KM13 | I |
| 13 | BAKLGH | O |
| 14 | 1/1000 | O |
| 15 | ATFOCS | O |
| 16 | UDRLGH | I |
| 17 to 20 | WBA<br>WBB<br>WBC<br>WBD | O |
| 21 | FADIO | O |
| 22 | PWLED | O |
| 23 | RECLED | O |

V:1V/div
H:50ns/div

H01 Pin⑧

V:5V/div
H:5ns/div

H02.Pin⑦

V:200mV/div
H:2ns/div

V05

V:50mV/div
H:20μs/div

09

V:50mV/div
H:20μs/div

13

V:200mV/div
H:10μs/div

01.Pin⑤

V:1V/div
H:20μs/div

01.Pin⑥

V:1V/div
H:20μs/div

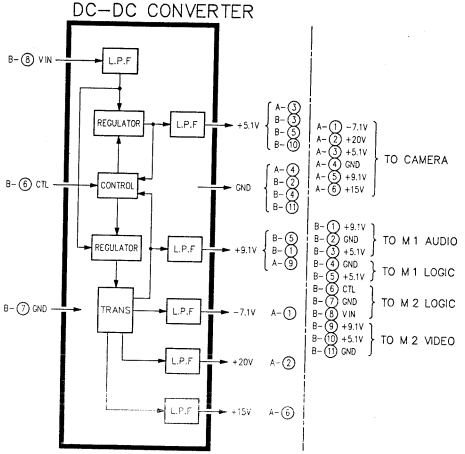
2.Pin⑨

V:500mV/div
H:20μs/div

02

V:100mV/div
H:20μs/div

## 6. DC-DC CONVERTER BLOCK DIAGRAM




### LOGIC MODE SHIFT TABLE

| Current mode \ Input mode | Start/stop | ▲ Eject | ■ Stop | ▶ Playback | ▶▶ FF | ◀◀ REW | ⊂● Rec. Review | ●II Pause | ● Recording | Self-timer | Interval rec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cassette holder closing | – | O | – | – | – | – | – | – | – | – | – |
| Stop | O | O | – | O | O | – | – | – | O | – | – |
| FF | – | O | O | O | – | O | – | – | – | – | – |
| REW | – | O | O | O | O | – | – | – | – | – | – |
| Playback | – | O | O | – | O | O | – | O | – | – | – |
| Cue | – | O | O | O | – | O | – | – | – | – | – |
| Review | – | O | O | O | O | – | – | – | – | – | – |
| Still | O | O | O | – | – | – | – | O | – | – | – |
| Record pause | O | O | O | – | – | – | O | O | O | O | O |
| Self-timer ON | O | – | O | – | – | – | – | O | – | O | – |
| Self-timer pause | – | – | O | – | – | – | – | – | – | O | – |
| Interval ON/pause | O | – | O | – | – | – | – | O | – | – | O |
| Recording | O | – | O | – | – | – | – | O | – | – | – |
| Self-timer start | O | – | O | – | – | – | – | O | – | – | – |
| Interval rec. start | – | – | O | – | – | – | – | – | – | – | – |
| Rec. Review | – | – | O | – | – | – | – | – | – | – | – |

Note : O Directly shifted to the specified mode.
– Not shifted.



## 7-1. LOGIC BLOCK DIAGRAM

### TERMINAL FUNCTIONS OF THE LOGIC MICROCOMPUTER

QR01 TMP47C860F2839Z (CPU2)

| Pin No. | Port \ Mode | STOP | PLAY | REC | FF | REW | CUE | REV | STILL | REC PAUSE | REC REV | REC LOCK | NO CASSETTE | ENG STOP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | LOAD | L | L | L | L | L | L | L | L | L | L | L | L | L |
| 6 | UN LOAD | L | L | L | L | L | L | L | L | L | L | L | L | L |
| 7 | LOAD POWER | H | L | L | H | H | L | L | L | L | L | H | H | H |
| 8 | CYLINDER SEL | | | | | | | | | | | | | |
| 9 | SER | L | L | L | L | L | H | H | L | L | L | L | L | L |
| 10 | REV | L | L | L | L | L | L | H | L | L | L | L | L | L |
| 11 | VP ON | L | L | L | L | L | H | H | H | L | L | L | L | L |
| 12 | FH | L | L | L | L | L | H | H | H | L | L | L | L | L |
| 13 | PAUSE | L | L | L | L | L | L | H | H | L | L | L | L | L |
| 14 | FF/REW MODE | H | H | H | H | H | L | L | L | L | L | L | L | L |
| 15 | SERVO RESET | H | H | H | H | H | H | H | H | H | H | H | H | H |
| 16 | CYLINDER ON/OFF | L | H | H | L | L | H | H | H | H | H | H | H | H |
| 17 | A | L | L | L | Lor H | L or H | L | L | L | L | L | L | L | L |
| 18 | B | L | L | L | Lor H | L or H | L | L | L | L | L | L | L | L |
| 19 | C | L | L | L | Lor H | L or H | L | L | L | L | L | L | L | L |
| 20 | REF D | L | L | L | L | L | L | L | L | L | L | L | L | L |
| 21 | REF CTL | L | H | H | L | L | L | H | L | L | L | L | L | L |
| 22 | SERVO PB | H | L | H | H | H | L | L | L | H | L | L | L | L |
| 23 | SERVO REC | L | L | H | L | L | L | L | L | L | L | H | L | H |
| 24 | REC DUTY | L | L | L | L | L | L | L | L | L | L | L | L | L |
| 27 | CAP OFF | H | H | L | H | L | L | L | L | L | L | L | L | L |
| 28 | CAP PWD | H | L | H | L | L | H | L | L | H | H | H | H | H |
| 29 | CAP PAUSE | L | H | H | L | L | L | L | H | L | L | L | H | H |
| 30 | SP/EP | | | | | | H | H | L | H | | L | L | L |
| 31 | AUDIO MUTE | L | L | L | L | L | H | H | H | L | L | L | L | L |
| 32 | REC-MUTE | L | L | H | L | L | L | L | L | H | H | L | L | L |
| 33 | D-PB | L | H | L | L | L | L | H | L | L | L | L | L | L |
| 34 | PB | L | H | L | L | L | H | H | H | L | L | L | L | L |
| 35 | AUDIO REC MUTE | H | H | L | L | H | H | H | L | H | H | L | L | L |
| 36 | REC-REV MUTE | L | L | L | L | L | L | L | L | L | H | H | H | H |
| 37 | VIDEO S/N SEL | | | | | | | | | | | L | L | L |
| 38 | AUDIO S/N SEL | | | | | | | | | | | | | |
| 55 | CAMERA ON/OFF | H | L | H | H | H | L | L | L | H | H | H | H | H |

Q601 TMP47C860F2834Z (CPU1)

| Pin | Name | I/O | |
|---|---|---|---|
| 1 | DATCHG | I | Display the date |
| 2 | Not used | | |
| 3 to 8 | KM00 – KM05 | O | Keymatrix output<br>"L": Scan |
| 9 to 12 | KM10 – KM13 | I | "L": Key input |
| 13 | BAKLGH | O | Backlight compensation ON/OFF<br>"H": ON "L": OFF |
| 14 | 1/1000 | O | 1/1000 shutter ON/OFF<br>"L": ON "H": OFF |
| 15 | ATFOCS | O | Manual focus/Auto focus<br>"H": auto focus "L": manual focus |
| 16 | UDRLGH | I | Alarm for the insufficient light<br>"L": insuffieitnt light |
| 17 to 20 | WBA<br>WBB<br>WBC<br>WBD | O | White balance setting<br>1000: indoor<br>1110: fluorescent lighting 1011: outdoor<br>0010: fully automatic |
| 21 | FADIO | O | Fade in and fade out<br>"H": Fade out |
| 22 | PWLED | O | POWER LED ON/OFF<br>"L": ON "H": OFF |
| 23 | RECLED | O | REC LED ON/OFF<br>"L": ON "H": OFF |
| 24 | DEWLED | O | DEW alarm LED ON/OFF<br>"L": alarm (with the information of the CPU2) |
| 25 | TEST | | |
| 26 | VSS | | GND |
| 27 | TMDAT | O | Timer data and command<br>4 bit command/48 bit data output |
| 28 | TMCLK | O | Timer data and command shift clock |
| 29 | TMSTB | O | Timer STB |
| 30 | TMCS | O | Selection of the timer chip<br>"H": selected |
| 31 | CGDAT | O | CG data and command<br>16 bit data and command outputs |
| 32 | CGCLK | O | CG data and command shift clock |
| 33 | CGRST | O | CG reset pulse<br>"L": reset |
| 34 | CGCS | O | Selection of the CG chip<br>"H": selected |
| 35 | TMDTIN | I | Timer data input<br>48 bit timer data |
| 36 | PWRCTL | O | ON/OFF of the switched 5V<br>"L": ON "H": OFF |
| 37 | SVMVSW | I | |
| 38 | DCCTL | O | DC-DC CONV ON/OFF<br>"H": ON, "L": OFF |

| Pin | Name | I/O | |
|---|---|---|---|
| 39 | TFG | I | Take up reel FG |
| 40 | SFG | I | Supply reel FG |
| 41 | ACADP | I | AC adaptor or battery input<br>"H": battery "L": AC adaptor |
| 42 | REMJAK | I | Remote control connection<br>"H": not connected "L": connected |
| 43 | — RESET | I | Reset "L": reset |
| 44<br>45 | X IN<br>X OUT | I<br>O | Oscillator connecting terminal |
| 46 | — HOLD | I | Hold "H": release the hold |
| 47 | REMOTE | I | Remote control signal input |
| 48 | OTAUTO | I | One-touch automatic operation switch input<br>"L": one-touch automatic operation |
| 49 | Not used | | |
| 50 | FADIOS | I | Fade in and fade out switch input<br>"L": fade out |
| 51 | SI | I | Serial data input |
| 52 | SO | O | Serial data output |
| 53 | SCK | I/O | Input and output of the serial data transfer shift clock |
| 54 | RQT | O | Requirement to start the serial data transfer<br>"L": requirement to start the serial data transfer |
| 55 | SYSRST | O | Release the CPU2 reset<br>"L": release the CPU2 reset |
| 56 | SPEP | I | Selecting switch of SP and EP<br>"H": EP "L": SP |
| 57 | BUZZER | O | Buzzer drive pulse output 1024 Hz |
| 58 | Vdd | | Power source +5V |
| 59 | Varef | I | Reference voltage for the A/D converter |
| 60 | Vass | I | Reference GND for the A/D converter |
| 61 | BATALM | I | Input for measuring the battery voltage |
| 62 | SVPRT1 | I | Test mode LSB 3 bit deciding input |
| 63 | TMBDWN | I | Input for measuring the timer battery voltage |
| 64 | SVPRT 2 | I | Test mode MSB 1 bit deciding input |

## MODE INDICATIONS IN EVF

| Tape operation mode indications | |
|---|---|
| Stop | ■ lights. |
| Pause | ●‖ blinks. |
| Recording | ● lights. |
| Rec. review | ⊂● lights. |
| Playback | ▶ lights. |
| Cue | ▶▶ lights. |
| Review | ◀◀▶ lights. |
| Still | ▶‖ lights. |
| Rewind | ◀◀ lights. |
| FF | ▶▶ lights. |
| Eject | ⏏ blinks. |
| Cassette up | CPU blinks. |



## TERMINAL FUNCTIONS OF THE LOGIC MICROCOMPUTER

QR01 TMP47C860F2839Z (CPU2)

| Pin No. | Name | I/O | Functions |
|---|---|---|---|
| 1 | CASSETTE SW | I | Cassette in SW input<br>"H": Cassette IN |
| 2 | REC SAFETY | I | REC inhibit SW Input<br>"H": ON |
| 3 | DEW | I | DEW condition detect input<br>DEW ON : The voltage of 2.5V or more is continously detected for 8 times with the interval of about 2 msec.<br>DEW OFF: The voltage of 1.25V or less is continuously detected for 8 times with the interval of about 2 msec. |
| 4 | FF/REW SEL | I | FF/REW speed CTL select |
| 5<br>6 | LOAD<br>UNLOAD | O | A control signal of a loading motor drive IC.<br>LOAD / UNLOAD / Motor condition<br>"H" "L" Loading<br>"L" "H" Un Loading<br>"H" "H" Brake<br>"L" "L" Stop |
| 7 | LOAD PW | O | Loading motor input voltage select<br>"L": About 8 V "H": About 6 V |
| 8 | CYLINDER INI | I | Servo IC initialization select signal |
| 9<br>10 | SER<br>REV | O | A control signal to set the servo IC to the search mode<br>[9] SER / [10] REV / Mode<br>"H" "L" Cue<br>"H" "H" Review<br>"L" * Play |
| 11 | VP ON | O | Pseudo V signal ON/OFF |
| 12 | FH compensation | O | fH compensation ON/OFF<br>"H": ON |
| 13 | PAUSE | O | Still mode Servo CTL ON/OFF<br>"H": ON |
| 14 | FF/REW | O | In FF/REW mode, this is set to "L" |
| 15 | SERVO RESET | O | Servo IC reset<br>"H": reset |
| 16 | CYLINDER ON/OFF | O | Cylinder motor rotation CTL |
| 17<br>18<br>19<br>20 | REF A<br>REF B<br>REF C<br>REF D | O | Capstan motor CTL |
| 21 | REF CTL | O | Capstan motor reference signal select |

| Pin No. | Name | I/O | Functions |
|---|---|---|---|
| 22<br>23 | PB<br>REC START | O | Servo IC mode select<br>[22] SER / [23] REC START / Servo mode<br>"H" "L" ASB Mode<br>"L" "L" PB Mode<br>"L" "H" REC Mode |
| 24 | REC DUTY CTL | O | CTL signal duty Control |
| 25 | TEST | | Test terminal of the microcomputer.<br>Ordinarily set to "Lo". |
| 26 | Vss | | GND |
| 27<br>28 | CAP OFF<br>CAP FWD | O | Capstan motor drive IC control<br>[27] CAP OFF / [28] CAP FWD / CAP Motor Mode<br>"H" "H" STOP<br>"H" "L" FWD<br>"L" "L" BWD |
| 29 | CAP PAUSE | O | |
| 30 | SP/EP | O | SP/EP select<br>PLAY/CUE/REV :<br>Output the result of the automatic judgemen<br>REC :<br>Output the designation of the SP/EP SW<br>In other modes :<br>Keeps the conditions |
| 31 | AUDIO MUTE | O | Audio mute output<br>"H": mute |
| 32 | REC MUTE | O | Rec mute ON/OFF<br>"H": ON |
| 33 | DELAY PB | O | Video EE,REC/PB select<br>"H": ON |
| 34 | PB | O | Video circuit power ON/OFF<br>"H" : PB block ON, REC block OFF<br>"L" : PB block OFF, REC block ON |
| 35 | Audio REC Mute | O | Erase head oscillation ON/OFF<br>"L": ON |
| 36 | REC-REV Mute | O | REC review mute<br>"H": mute |
| 37 | VIDEO S/N | O | |
| 38 | AUDIO S/N | O | |
| 39<br>40<br>41 | CAM A<br>CAM B<br>CAM C | I | Loading CAM SW |
| 42 | S/N SIG | I | |

| Pin No. | Name | I/O | |
|---|---|---|---|
| 43 | RESET | I | RESE |
| 44<br>45 | X IN<br>X OUT | I<br>O | 4.19M |
| 46 | HOLD | I | A tern<br>compu |
| 47 | CTL PULS | I | CTL p |
| 48 | CAP FG | I | Capsta |
| 49 | SW P | I | SW pu |
| 50 | | | |
| 51<br>52<br>53<br>54 | SI<br>SO<br>SCK<br>RQT | I<br>O<br>I/O<br>I | A sign<br>CPU2 |
| 55 | CAMERA ON/OFF | O | Came |
| 56 | FRAME SEL | I | Frame |
| 57 | CASSETTE N/S | I | |
| 58 | VDD | I | +5V |
| 59<br>60 | VAREF<br>VASS | I | A ref<br>conv |
| 61 | S-REEL | I | S-ree<br>SI<br>E |
| 62 | T-REEL | O | T-re<br>S<br>E |
| 63<br>64 | TEPE END SENSOR<br>TAPE END LED | I<br>O | Tape |

## FUNCTIONS OF THE LOGIC MICROCOMPUTER

**'860F2839Z (CPU2)**

| | I/O | Functions |
|---|---|---|
| E | I | Cassette in-SW input<br>"H": Cassette IN |
| TY | I | REC inhibit SW Input<br>"H": ON |
| | I | DEW condition detect input<br>DEW ON : The voltage of 2.5V or more is continously detected for 8 times with the interval of about 2 msec.<br>DEW OFF: The voltage of 1.25V or less is continuously detected for 8 times with the interval of about 2 msec. |
| / | I | FF/REW speed CTL select |
| ) | O | A control signal of a loading motor drive IC.<br>LOAD / UNLOAD / Motor condition<br>"H" / "L" / Loading<br>"L" / "H" / Un Loading<br>"H" / "H" / Brake<br>"L" / "L" / Stop |
| W | O | Loading motor input voltage select<br>"L": About 8 V "H": About 6 V |
| ER | I | Servo IC initialization select signal |
| | O | A control signal to set the servo IC to the search mode<br>[9] SER / [10] REV / Mode<br>"H" / "L" / Cue<br>"H" / "H" / Review<br>"L" / * / Play |
| | O | Pseudo V signal ON/OFF |
| ion | O | fH compensation ON/OFF<br>"H": ON |
| : | O | Still mode Servo CTL ON/OFF<br>"H": ON |
| W | O | In FF/REW mode, this is set to "L" |
| ) | O | Servo IC reset<br>"H": reset |
| T | O | |
| ER F | O | Cylinder motor rotation CTL |
| ) | O | Capstan motor CTL |
| TL | O | Capstan motor reference signal select |

| Pin No. | Name | I/O | Functions |
|---|---|---|---|
| 22<br>23 | PB<br>REC START | O | Servo IC mode select<br>[22] SER / [23] REC START / Servo mode<br>"H" / "L" / ASB Mode<br>"L" / "L" / PB Mode<br>"L" / "H" / REC Mode |
| 24 | REC DUTY CTL | O | CTL signal duty Control |
| 25 | TEST | | Test terminal of the microcomputer. Ordinarily set to "Lo". |
| 26 | Vss | | GND |
| 27<br>28 | CAP OFF<br>CAP FWD | O | Capstan motor drive IC control<br>[27] CAP OFF / [28] CAP FWD / CAP Motor Mode<br>"H" / "H" / STOP<br>"H" / "L" / FWD<br>"L" / "L" / BWD |
| 29 | CAP PAUSE | O | |
| 30 | SP/EP | O | SP/EP select<br>PLAY/CUE/REV :<br>Output the result of the automatic judgement<br>REC :<br>Output the designation of the SP/EP SW<br>In other modes :<br>Keeps the conditions |
| 31 | AUDIO MUTE | O | Audio mute output<br>"H": mute |
| 32 | REC MUTE | O | Rec mute ON/OFF<br>"H": ON |
| 33 | DELAY PB | O | Video EE,REC/PB select<br>"H": ON |
| 34 | PB | O | Video circuit power ON/OFF<br>"H" : PB block ON, REC block OFF<br>"L" : PB block OFF, REC block ON |
| 35 | Audio REC Mute | O | Erase head oscillation ON/OFF<br>"L": ON |
| 36 | REC-REV Mute | O | REC review mute<br>"H": mute |
| 37 | VIDEO S/N | O | |
| 38 | AUDIO S/N | O | |
| 39<br>40<br>41 | CAM A<br>CAM B<br>CAM C | I | Loading CAM SW |
| 42 | S/N SIG | I | |

| Pin No. | Name | I/O | Functions |
|---|---|---|---|
| 43 | RESET | I | RESET |
| 44<br>45 | X IN<br>X OUT | I<br>O | 4.19MHz |
| 46 | HOLD | I | A terminal to hold the data of the micro-computer. When not used, this is set to "H". |
| 47 | CTL PULS | I | CTL pulse input |
| 48 | CAP FG | I | Capstan FG signal input |
| 49 | SW P | I | SW pulse signal input |
| 50 | | | |
| 51<br>52<br>53<br>54 | SI<br>SO<br>SCK<br>RQT | I<br>O<br>I/O<br>I | A signal for the data communication with the CPU2. |
| 55 | CAMERA ON/OFF | O | Camera power ON/OFF |
| 56 | FRAME SEL | I | Frame advance control |
| 57 | CASSETTE N/S | I | |
| 58 | VDD | I | +5V |
| 59<br>60 | VAREF<br>VASS | I | A reference voltage and GND for the A/D converter built-in the microcomputer |
| 61 | S-REEL | I | S-reel rotation detect<br>SP PLAY/REC : 0.76 Hz to 1.17 Hz<br>0.86 sec to 1.32 sec<br>EP PLAY/REC : 0.25 Hz to 0.39 Hz<br>2.54 sec to 4 sec |
| 62 | T-REEL | O | T-reel rotation detect<br>SP PLAY/REC : 1.22 Hz to 2.67 Hz<br>0.38 sec to 0.82 sec<br>EP PLAY/REC : 0.25 Hz to 0.9 Hz<br>1.11 sec to 4 sec |
| 63<br>64 | TEPE END SENSOR<br>TAPE END LED | I<br>O | Tape end detect |

**Logic Block Waveform**

① Q601.Pin ③

V:1V/div
H:1ms/div

② Q603.Pin ⑤

V:1V/div
H:20μs/div

③ Q603.Pin ⑥

V:1V/div
H:50μs/div

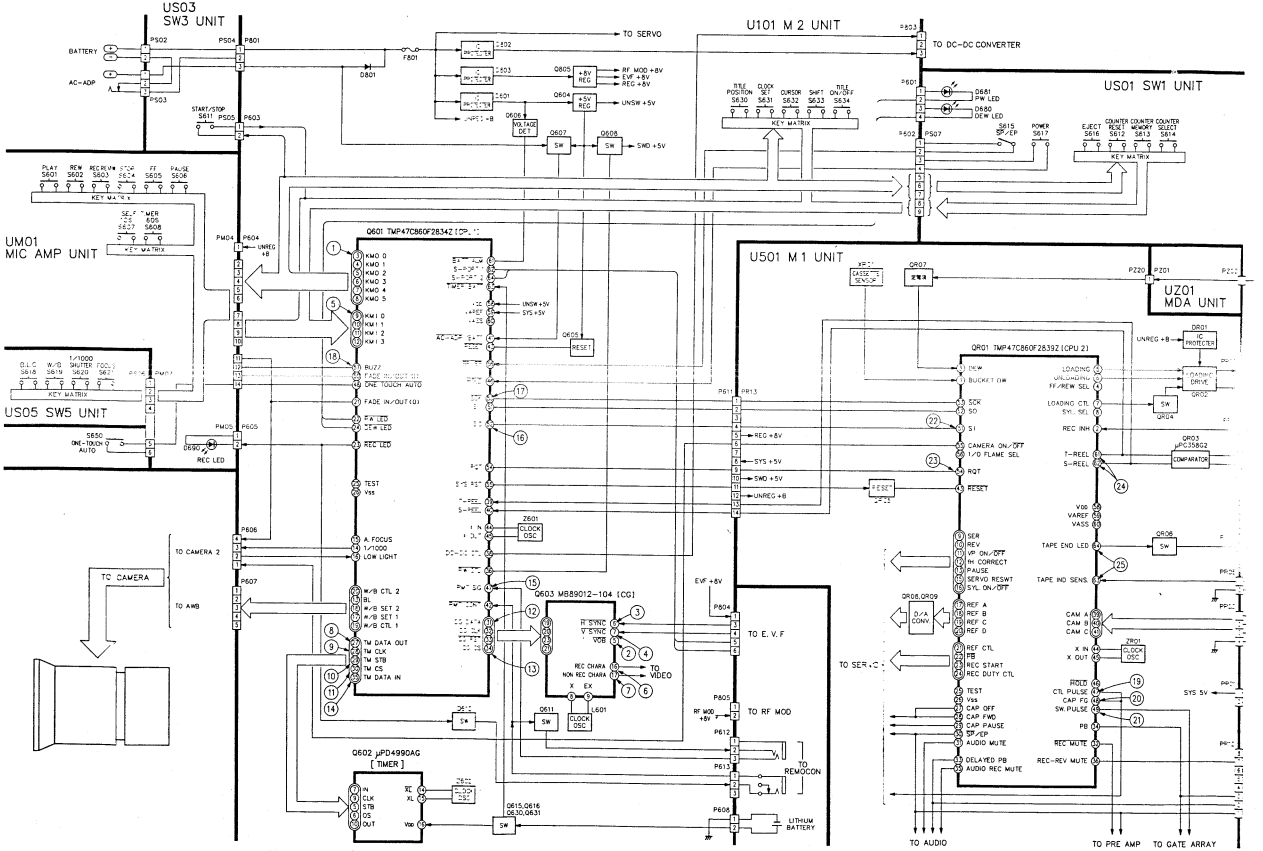
④ Q603.Pin ⑦

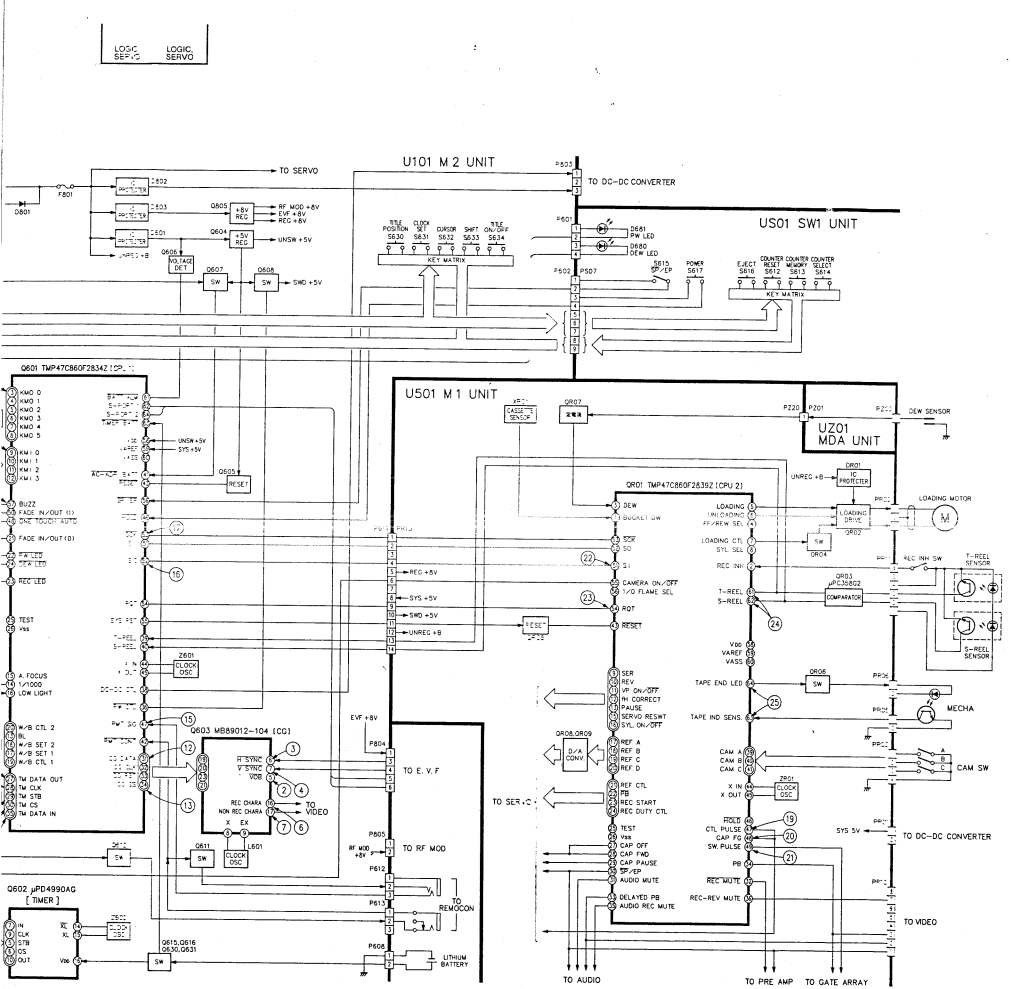
V:1V/div
H:5ms/div

⑤ Q601.Pin ⑨

V:1V/div
H:1ms/div

## LOGIC BLOCK DIAGRAM



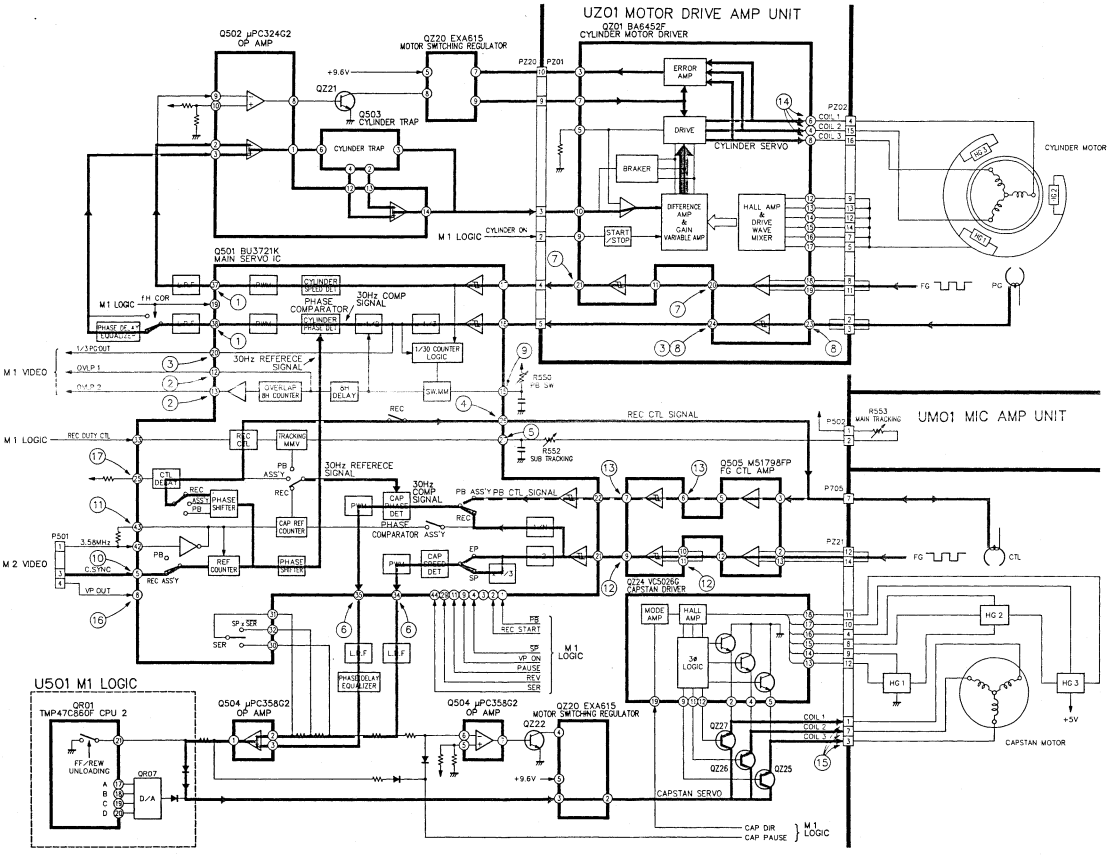



3-22

| | |
|---|---|
| ⑥ Q603.Pin ⑯ V:1V/div H:20μs/div | ⑦ Q603.Pin ⑰ V:1V/div H:20μs/div |
| ⑧ Q601.Pin ㉗ V:1V/div H:1ms/div | ⑨ Q601.Pin ㉘ V:1V/div H:200μs/div |
| ⑩ Q601.Pin ㉙ V:1V/div H:200μs/div | ⑪ Q601.Pin ㉚ V:1V/div H:1ms/div |
| ⑫ Q601.Pin ㉛ V:1V/div H:200μs/div | ⑬ Q601.Pin ㉜ V:1V/div H:500μs/div |
| ⑭ Q601.Pin ㉝ V:1V/div H:500μs/div | ⑮ Q601.Pin ㉞ V:1V/div H:20ms/div |
| ⑯ Q601.Pin ㉟ V:1V/div H:1ms/div | ⑰ Q601.Pin ㊱ V:1V/div H:1ms/div |
| ⑱ Q601.Pin ㊲ V:1V/div H:2ms/div | ⑲ QR01.Pin ㊳ V:1V/div H:10ms/div |
| ⑳ QR01.Pin ㊴ V:1V/div H:220μs/div | ㉑ QR01.Pin ㊵ V:1V/div H:10ms/div |
| ㉒ QR01.Pin ㊶ V:1V/div H:1ms/div | ㉓ QR01.Pin ㊷ V:1V/div H:5ms/div |
| ㉔ QR01.Pin ㊸ (UP).Pin ㊹ (LO) V:5V/div H:10ms/div | ㉕ QR01.Pin ㊸ (UP).Pin ㊹ (LO) V:5V/div H:10ms/div |

3-23

## 8-1. SERVO BLOCK DIAGRAM

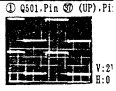







Servo Block Wa

① Q501.Pin 30 (UP).Pi



V:2
H:0

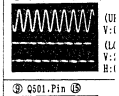
③ QZ01.Pin 24 (UP). Q

V:2
H:2

⑤ Q501.Pin 27

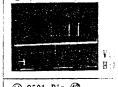
V:1
H:1

⑦ QZ01.Pin 28 (UP).P



(UI
V:(
(LA
V:
H:(

⑨ Q501.Pin 15



V:
H:

⑪ Q501.Pin 43

V:
H:

⑬ Q505.Pin 6 (UP)

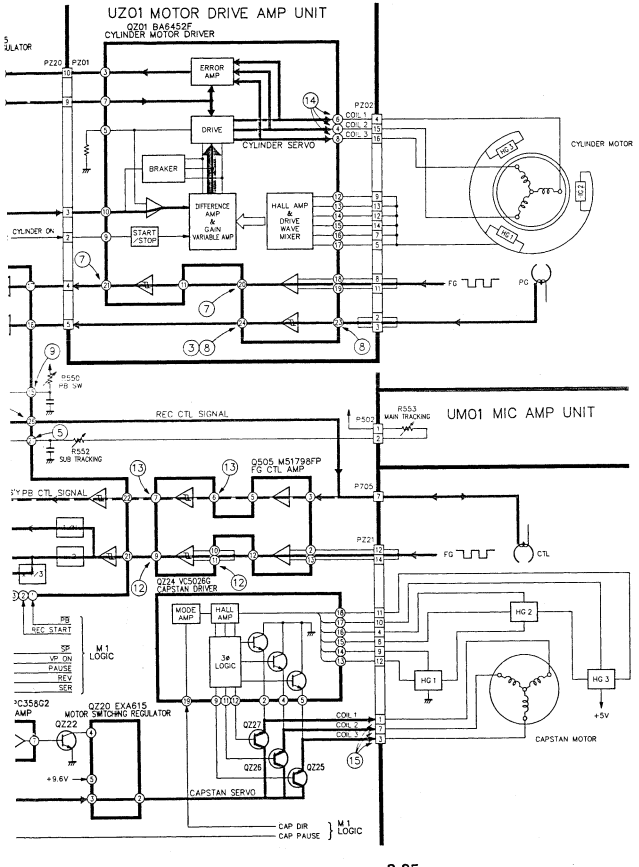
(L
V:
H:

⑮ PZ21.Pin ①, ③,

V:
H:

⑰ Q501.Pin 25

V:
H:






## Servo Block Waveform

① Q501.Pin ㉚ (UP).Pin ㉘ (LO)
V:2V/div
H:0.2μs/div

② Q501.Pin ⑱ (UP).Pin ⑫ (LO)
V:2V/div
H:2ms/div

③ QZ01.Pin ㉔ (UP), Q501.Pin ㉙ (LO)
V:2V/div
H:20ms/div

④ Q501.Pin ㉙
V:1V /div
H:10ms/div

⑤ Q501.Pin ㉗
V:1V/div
H:10ms/div

⑥ Q501.Pin ㉘ (UP).Pin ㉟ (LO)
V:2V/div
H:0.2μs/div

⑦ QZ01.Pin ㉖ (UP).Pin ㉑ (LO)
(UP)
V:0.5V/div
(LO)
V:2V/div
H:0.5ms/div

⑧ QZ01.Pin ㉒ (UP).Pin ㉞ (LO)
(UP)
V:0.2V/div
(LO)
V:2V/div
H:5ms/div

⑨ Q501.Pin ⑮
V:1V/div
H:5ms/div

⑩ Q501.Pin ⑤
V:1V/div
H:0.1ms/div

⑪ Q501.Pin ⑬
V:1V/div
H:0.2μs/div

⑫ Q505.Pin ⑪ (UP).Pin ③ (LO)
(UP)
V:1V/div
(LO)
V:2V/div
H:0.5ms/div

⑬ Q505.Pin ⑥ (UP).Pin ⑦ (LO)
(UP)
V:1V/div
(LO)
V:2V/div
H:5ms/div

⑭ QZ01.Pin ④, ⑥, ⑧
V:1V/div
H:1ms/div

⑮ PZ21.Pin ①, ③, ⑦
V:0.5V/div
H:20ms/div

⑯ Q501.Pin ⑧
V:2V/div
H:5ms/div

⑰ Q501.Pin ㉕
V:1V/div
H:10ms/div

## Video Block Waveform

① Q301.Pin ⑪
V:0.2V/div
H:5ms/div

②TP302
V:0.2V/div
H:5ms/div

③ Q301.Pin ㉔
V:0.5V/div
H:5ms/div

④ QB91.Pin ⑦
V:2V/div
H:5ms/div

⑤ QA91.Pin ③
V:50mV/div
H:10μs/div

⑥ QA91.Pin ㉝
V:0.05V/div
H:10μs/div

⑦ QA91.Pin ⑱
V:0.2V/div
H:10μs/div

⑧ QA91.Pin ㉔
V:0.2V/div
H:10μs/div

⑨ QA91.Pin ⑲
V:0.2V/div
H:10μs/div

⑩ QA91.Pin ⑭
V:0.2V/div
H:10μs/div

⑪ QB91.Pin ㉖
V:0.1V/div
H:10μs/div

⑫ QB91.Pin ①
V:0.05V/div
H:10μs/div

⑬ QB91.Pin ②
V:0.2V/div
H:10μs/div

⑭ Q303.Pin ⑮
V:0.2V/div
H:0.1μs/div

⑮ QB91.Pin ⑰
V:0.1V/div
H:0.1μs/div

⑯ QB91.Pin ⑮
V:0.1V/div
H:0.1μs/div

⑰ QA91.Pin ⑧
V:0.5V/div
H:10μs/div

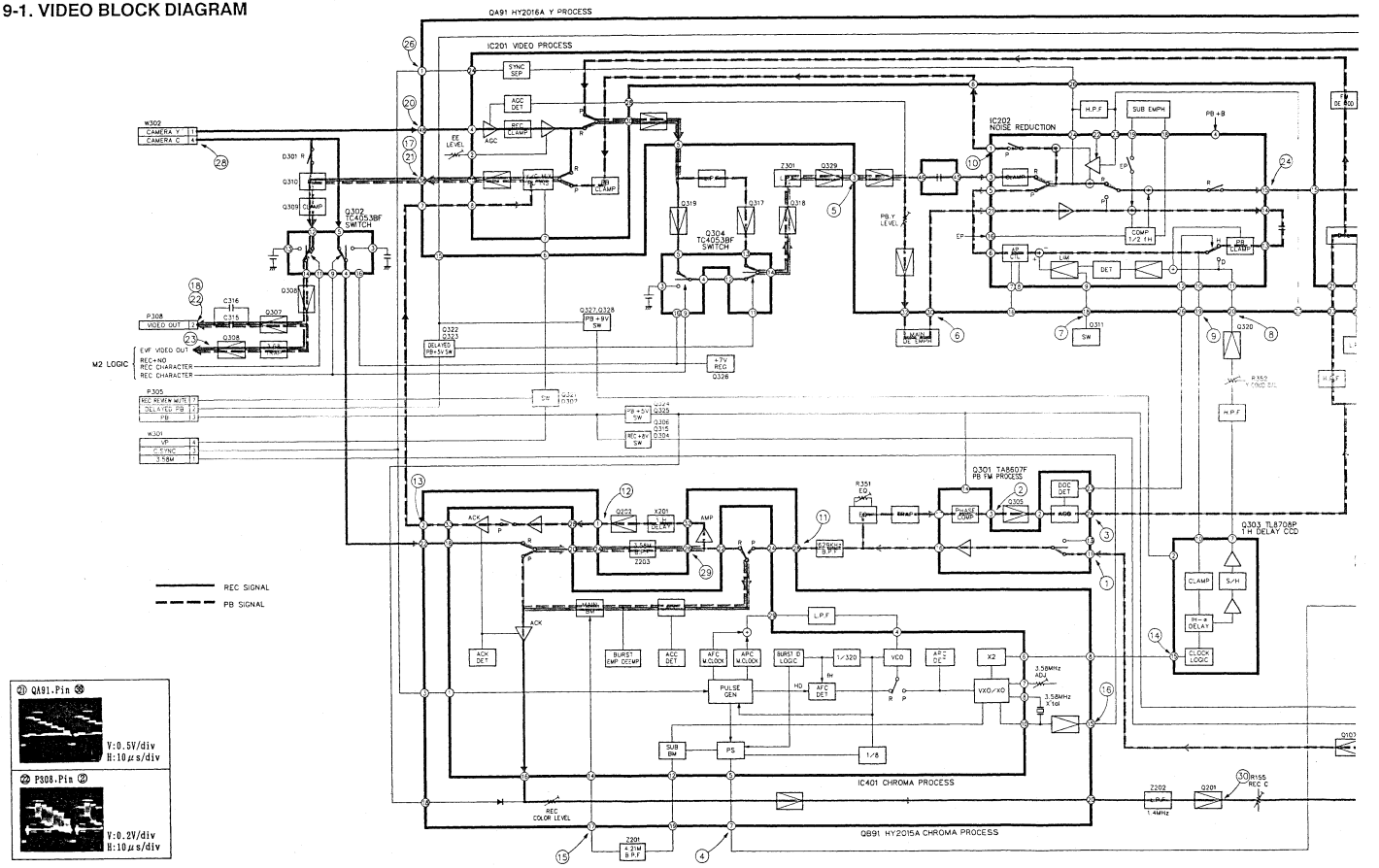
⑱ P303.Pin ②
V:0.2V/div
H:10μs/div

⑲ Q101.Pin ㉚
V:2V/div
H:10ms/div

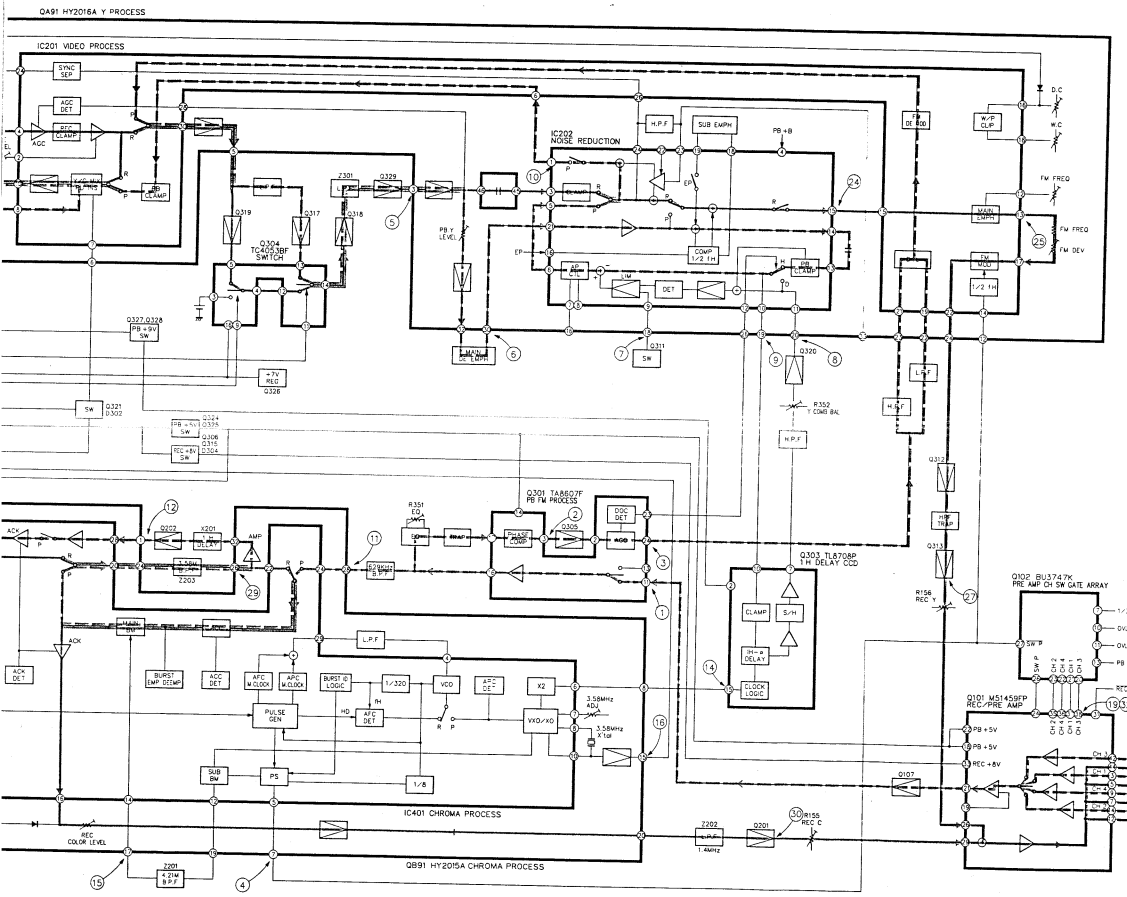
⑳ QA91.Pin ㊱
V:0.2V/div
H:10μs/div

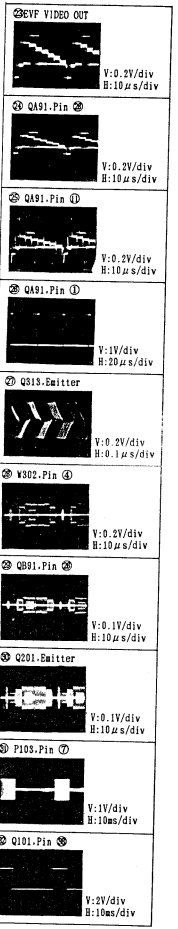
VIDEO, AUDIO | VIDEO, AUDIO

## 9-1. VIDEO BLOCK DIAGRAM

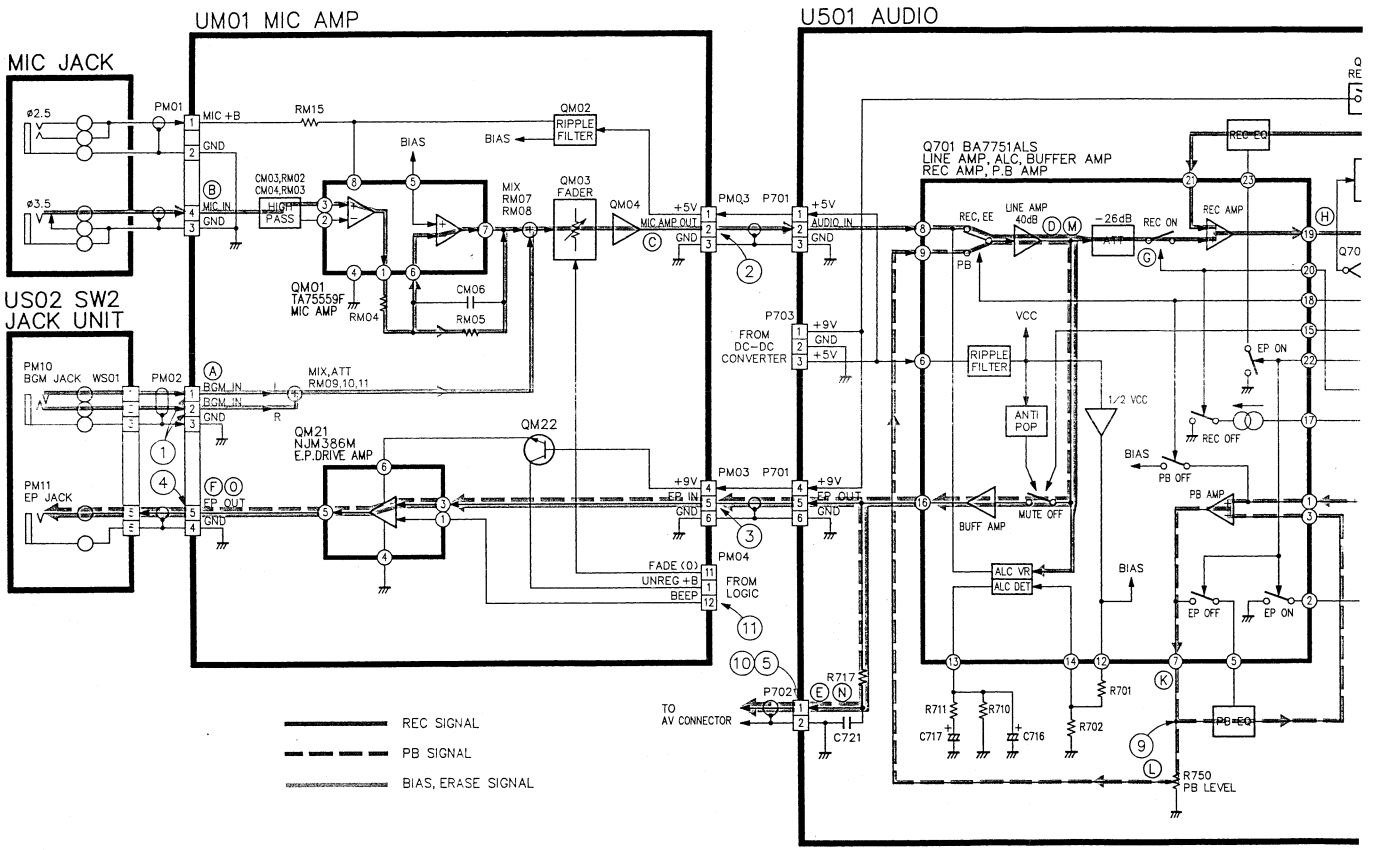


VIDEO AUDIO VIDEO AUDIO

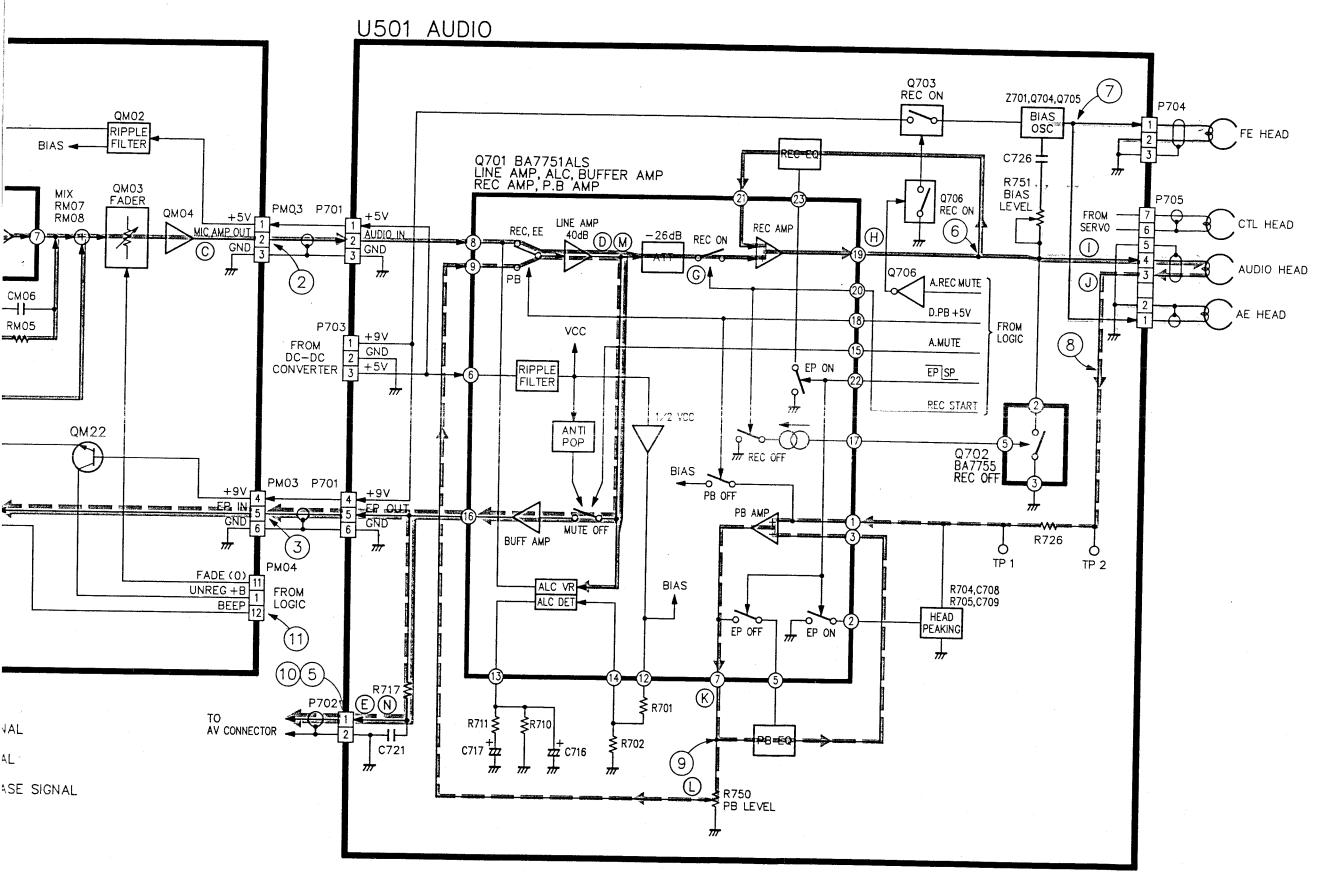


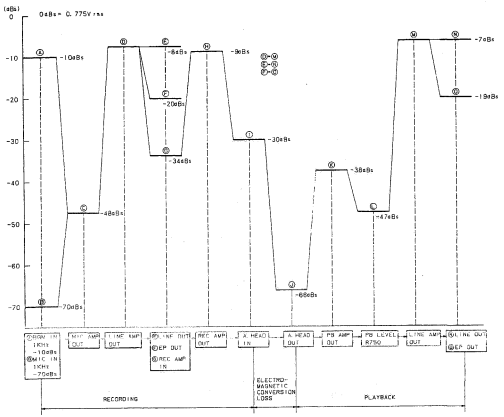
## 10-1. AUDIO BLOCK DIAGRAM

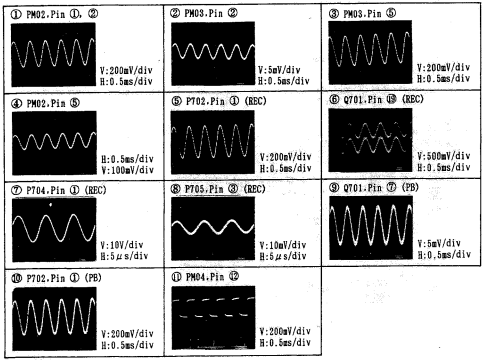


# U501 AUDIO


Q701 BA7751ALS
LINE AMP, ALC, BUFFER AMP
REC AMP, P.B AMP
QM02
RIPPLE FILTER
BIAS
QM03
FADER
MIX
RM07
RM08
QM04
CM06
RM05
QM22
PM03 P701
MIC AMP OUT
AUDIO IN
EP IN
EP OUT
GND
+5V
+9V
P703
FROM DC-DC CONVERTER
PM04
FADE (O)
UNREG +B
BEEP
FROM LOGIC
P702
TO AV CONNECTOR
R717
C721
R711
R710
C717
C716
R702
R701
R750
PB LEVEL
LINE AMP 40dB
REC, EE
PB
-26dB ATT
REC ON
REC AMP
VCC
RIPPLE FILTER
ANTI POP
1/2 VCC
BUFF AMP
MUTE OFF
ALC VR
ALC DET
BIAS
PB OFF
REC OFF
EP ON
PB AMP
EP OFF
REC-EQ
PB-EQ
Q703
REC ON
Q706
REC ON
Q706
A.REC MUTE
D.PB +5V
A.MUTE
EP SP
REC START
FROM LOGIC
Q702
BA7755
REC OFF
Z701,Q704,Q705
BIAS OSC
C726
R751
BIAS LEVEL
R726
TP 1
TP 2
R704,C708
R705,C709
HEAD PEAKING
P704
FE HEAD
P705
FROM SERVO
CTL HEAD
AUDIO HEAD
AE HEAD

## Audio Level Chart

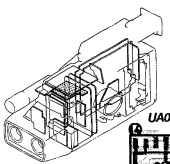


## 5-2. AUTO WHITE BALANCE PC BOARD

V:REC or EE

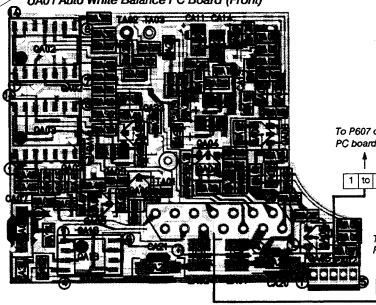
| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| QA04 | B-3 | | | |
| QA05 | A-4 | | | |
| QA06 | B-4 | | | |
| QA07 | B-3 | 2.3 | 2.6 | 0.1 |
| QA08 | A-2 | 5.0 | 4.6 | 4.7 |
| QA09 | B-2 | 0 | 2.5 | 0 |

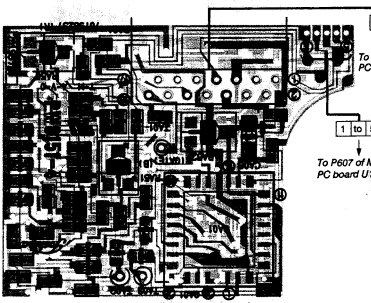


Note: "QA33" may be printed on the PC board instead of "QA07".

*UA01 Auto White Balance PC Board (Front)*

| IC location | |
|---|---|
| QA02 | B-2 |
| QA03 | B-2 |
| QA13 | A-2 |



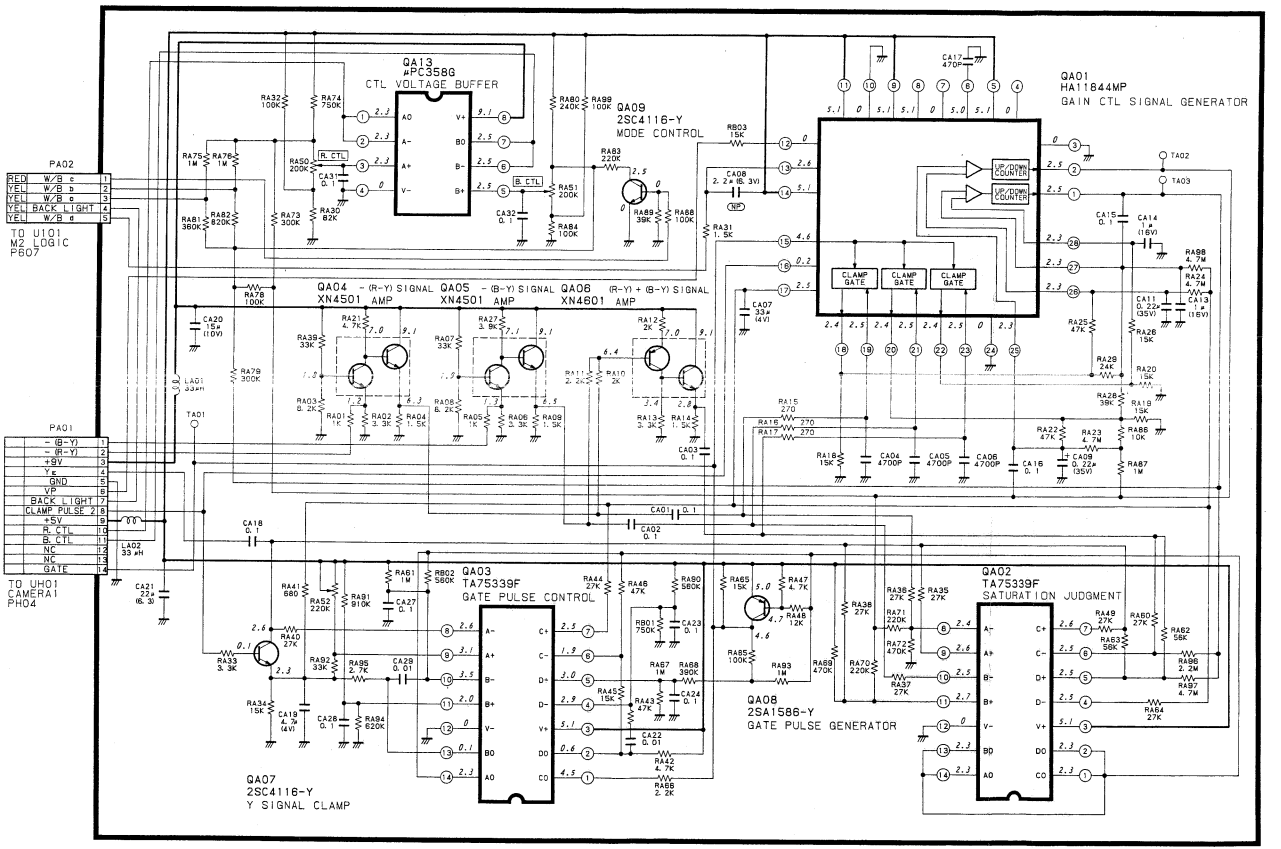

*UA01 Auto White Balance PC Board (Rear)*

| Adjusting VR location | |
|---|---|
| RA50 | A-2 |
| RA51 | B-3 |
| RA52 | B-3 |

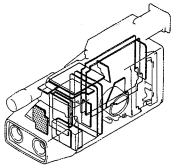
| IC location | |
|---|---|
| QA01 | C-3 |

## 5-3. AUTO WHITE BALANCE (A. W. B.) CIRCUIT

UA01 AUTO WHITE BALANCE (A.W.B) CIRCUIT



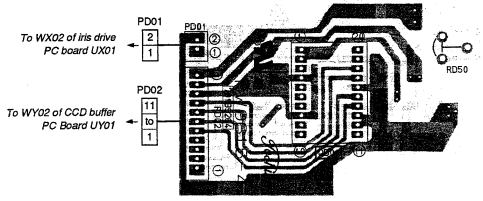
## 5-4. HEAD R PC BOARD

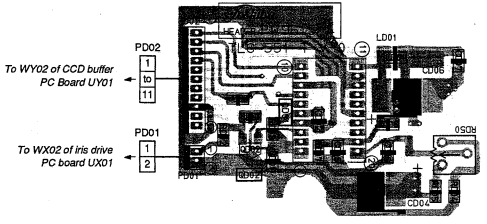


| Variohm location | |
|---|---|
| RD50 | B-4 |

| IC location | |
|---|---|
| QD01 | A-3 |

*UD01 Head R PC Board (Front)*




*UD01 Head R PC Board (Rear)*

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| QD02 | B-3 | 7.1 | 0 | 6.4 |

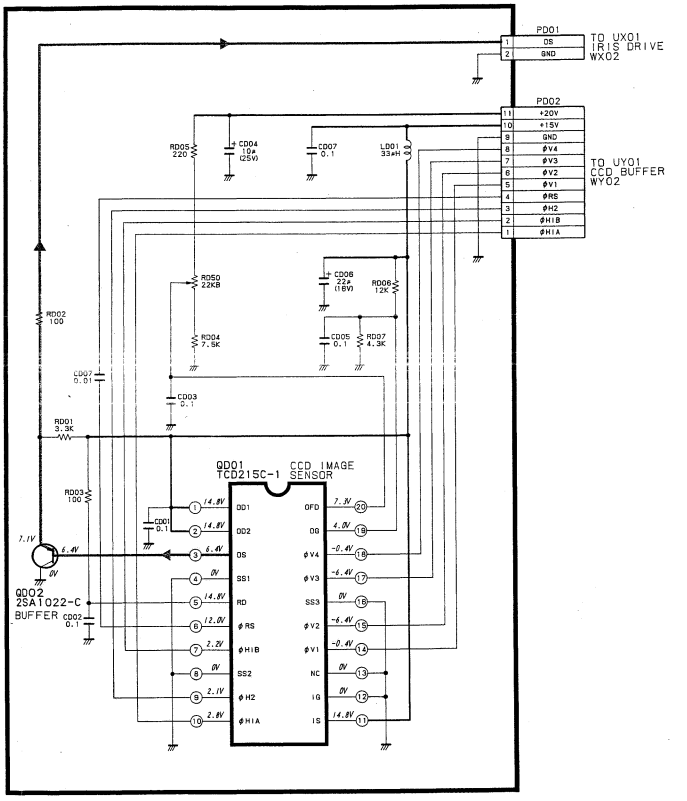
| Variohm location | |
|---|---|
| RD50 | B-4 |

| IC location | |
|---|---|
| QD01 | B-3 |

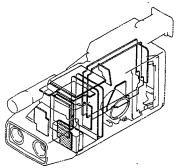


## 5-5. HEAD R CIRCUIT

UD01 HEAD R CIRCUIT



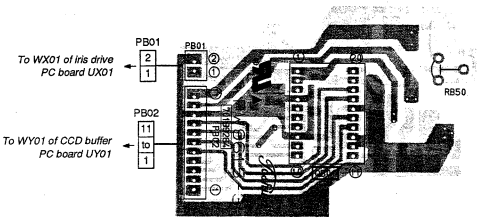
## 5-6. HEAD L PC BOARD

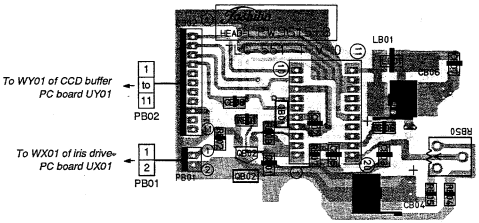


| Variohm location | |
|---|---|
| RB50 | B-4 |

| IC location | |
|---|---|
| QB01 | A-3 |

*UB01 Head L PC Board (Front)*




*UB01 Head L PC Board (Rear)*

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| QB02 | B-3 | 7.1 | 0 | 6.4 |

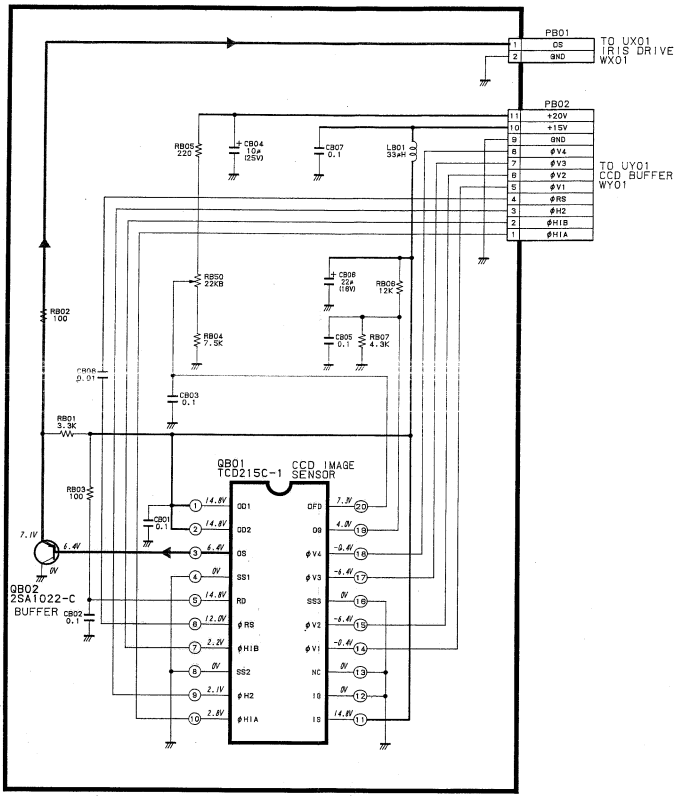
| Variohm location | |
|---|---|
| RB50 | B-4 |

| IC location | |
|---|---|
| QB01 | B-3 |

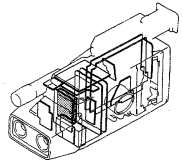


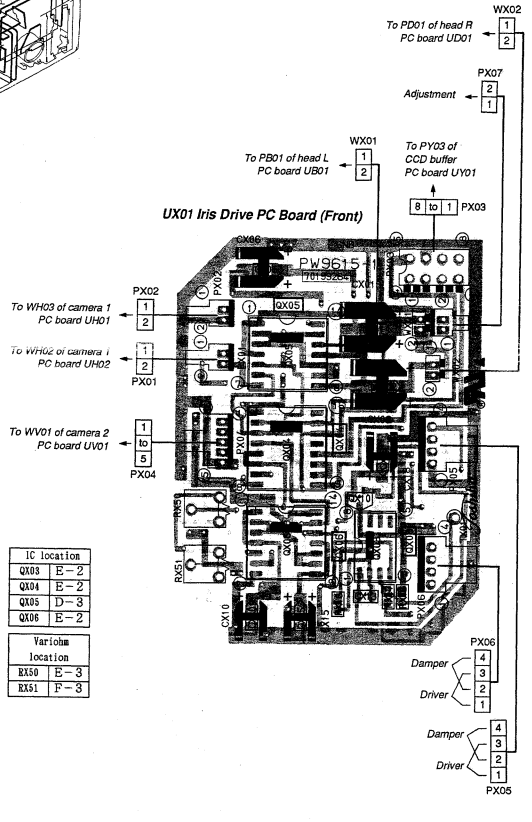
## 5-7. HEAD L CIRCUIT

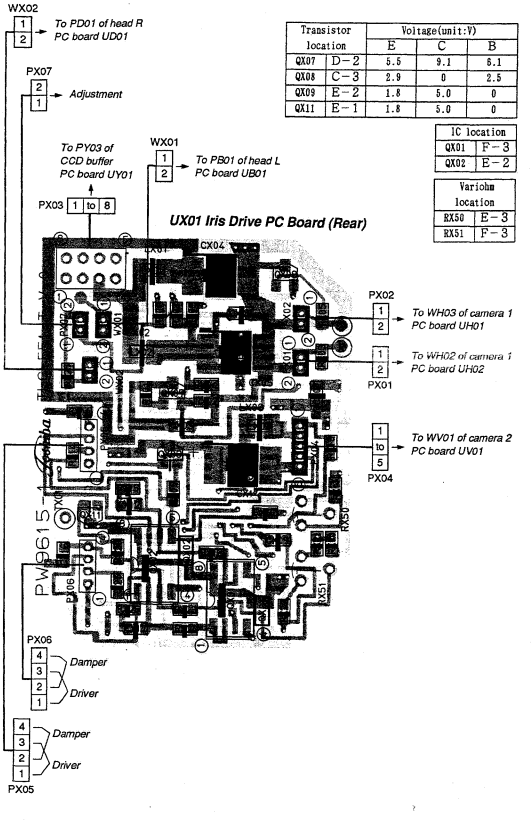
UB01 HEAD L CIRCUIT



## 5-8. IRIS DRIVE PC BOARD





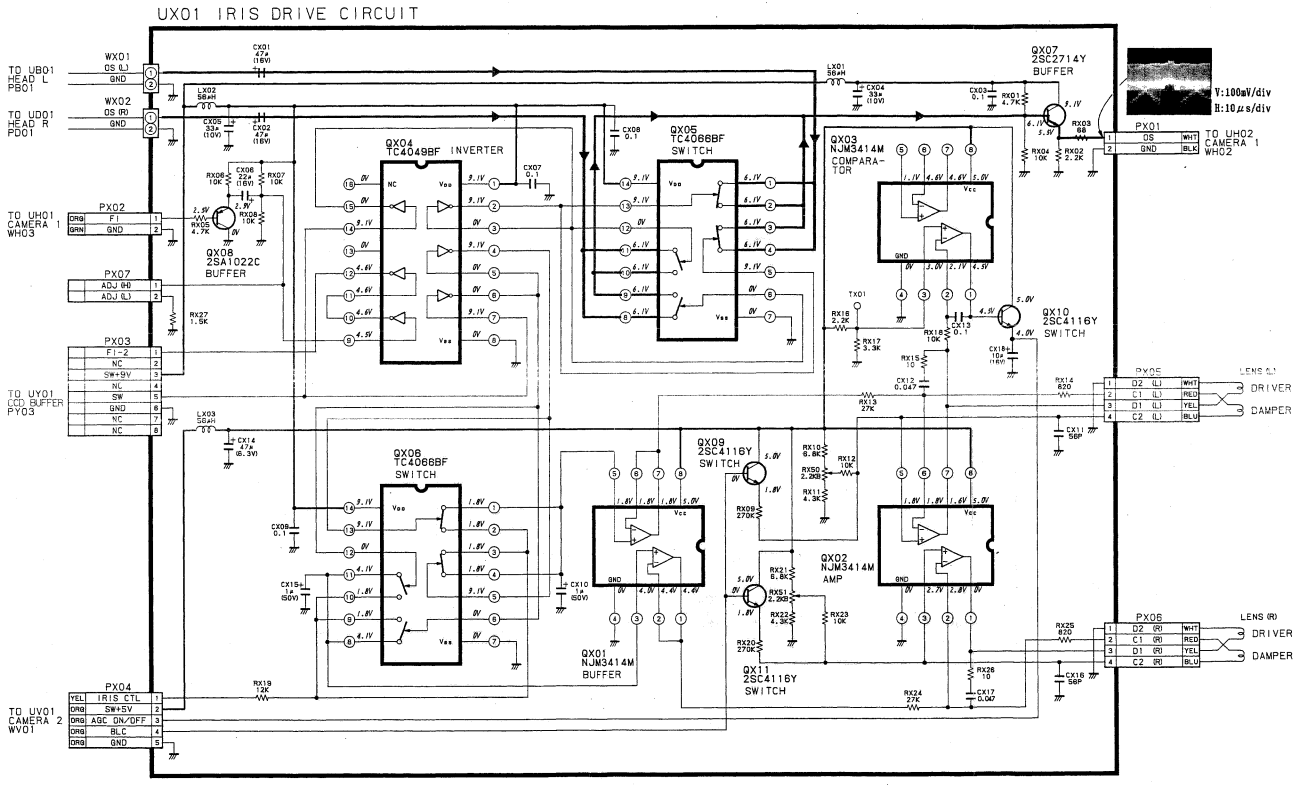




| Transistor location | | Voltage(unit:V) | | |
|---|---|---|---|---|
| | | E | C | B |
| QX07 | D-2 | 5.5 | 9.1 | 6.1 |
| QX08 | C-3 | 2.9 | 0 | 2.5 |
| QX09 | E-2 | 1.8 | 5.0 | 0 |
| QX11 | E-1 | 1.8 | 5.0 | 0 |

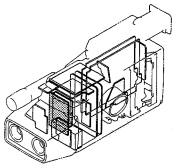
| IC location | |
|---|---|
| QX01 | F-3 |
| QX02 | E-2 |

| Variohm location | |
|---|---|
| RX50 | E-3 |
| RX51 | F-3 |

## 5-9. IRIS DRIVE CIRCUIT



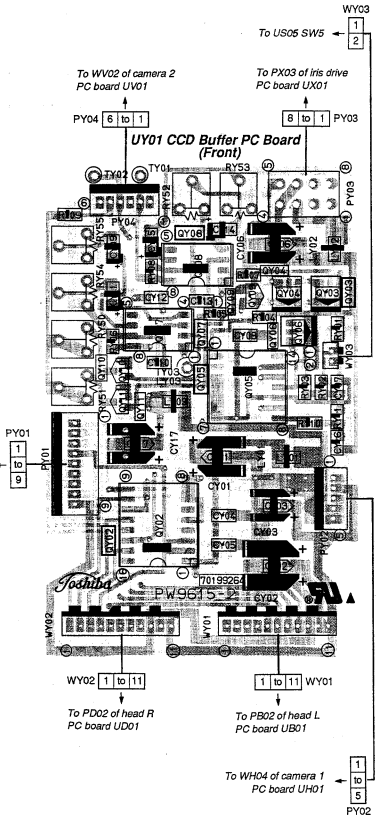
## 5-10. CCD BUFFER PC BOARD

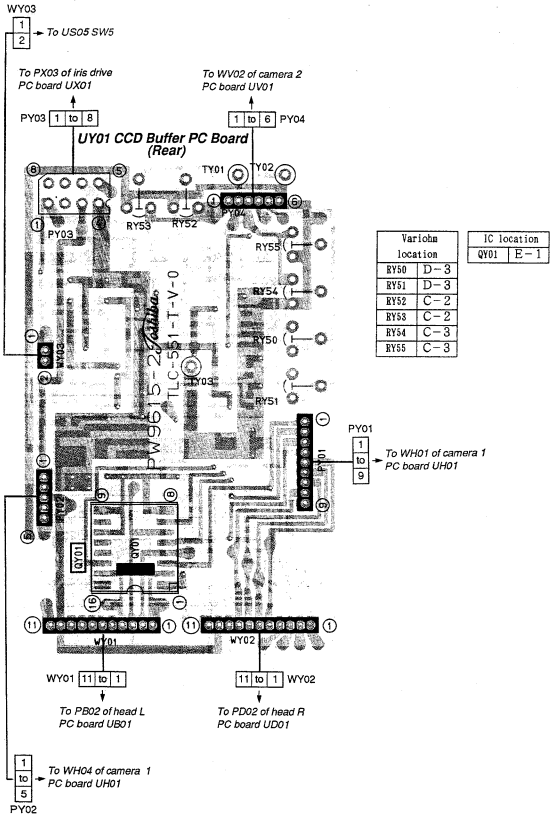


| Transistor location | | Voltage(unit:V) | | |
|---|---|---|---|---|
| | | E | C | B |
| QY09 | D-2 | 0 | 0 | 9.0 |
| QY10 | D-3 | 0 | 0 | 9.0 |
| QY11 | D-3 | 0 | 0 | 0 |

| IC location | |
|---|---|
| QY02 | E-3 |
| QY03 | C-1 |
| QY04 | C-2 |
| QY05 | D-2 |
| QY06 | D-2 |
| QY07 | D-2 |
| QY08 | C-2 |

| Variohm location | |
|---|---|
| RY50 | D-3 |
| RY51 | D-3 |
| RY54 | C-3 |
| RY55 | C-3 |

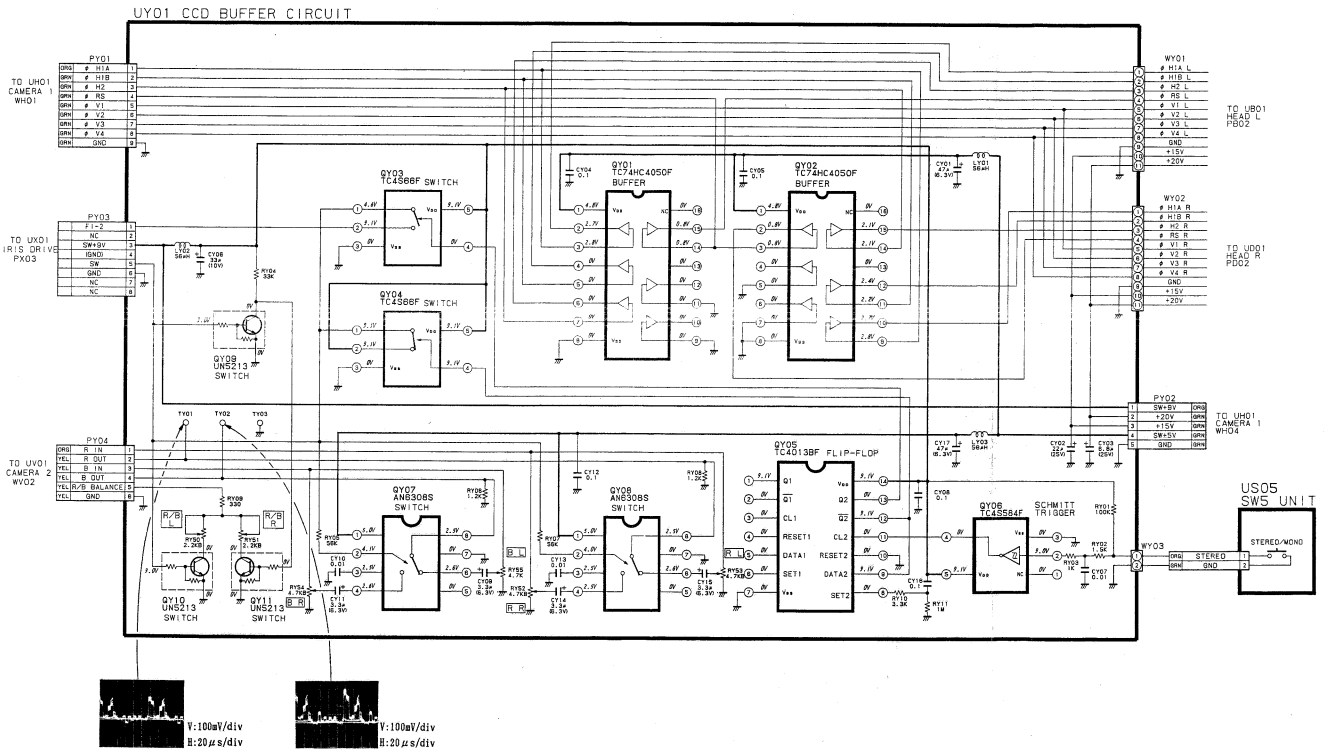

WY03
To US05 SW5
To WV02 of camera 2 PC board UV01
To PX03 of iris drive PC board UX01
PY04 6 to 1
8 to 1 PY03
UY01 CCD Buffer PC Board (Front)
PY01
To WH01 of camera 1 PC board UH01
WY02 1 to 11
1 to 11 WY01
To PD02 of head R PC board UD01
To PB02 of head L PC board UB01
To WH04 of camera 1 PC board UH01
PY02


WY03
To US05 SW5
To PX03 of iris drive PC board UX01
To WV02 of camera 2 PC board UV01
PY03 1 to 8
1 to 6 PY04
UY01 CCD Buffer PC Board (Rear)
PY01
To WH01 of camera 1 PC board UH01
WY01 11 to 1
11 to 1 WY02
To PB02 of head L PC board UB01
To PD02 of head R PC board UD01
To WH04 of camera 1 PC board UH01
PY02

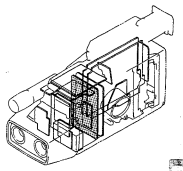
| Variohm location | |
|---|---|
| RY50 | D-3 |
| RY51 | D-3 |
| RY52 | C-2 |
| RY53 | C-2 |
| RY54 | C-3 |
| RY55 | C-3 |

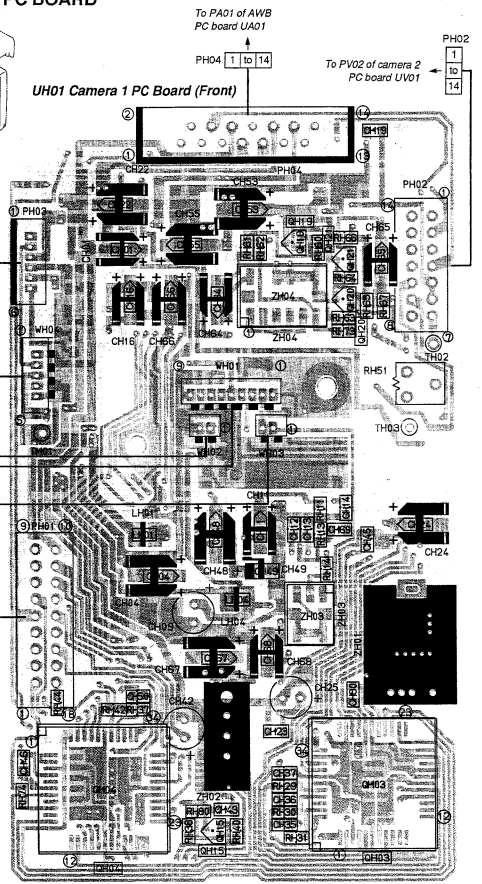
| IC location | |
|---|---|
| QY01 | E-1 |

## 5-11. CCD BUFFER CIRCUIT



## 5-12. CAMERA 1 PC BOARD




UH01 Camera 1 PC Board (Front)
To PA01 of AWB PC board UA01
PH04 1 to 14
To PV02 of camera 2 PC board UV01
PH02 1 to 14
PH03 1 to 6
To DC-DC converter
WH04 1 to 5
To PY02 of CCD buffer PC board UY01
WH02 2 1
To PX01 of iris drive PC board UX01
To PY01 of CCD buffer PC board UY01
2 1 WH01
To PX02 of iris drive PC board UX01
9 to 1 WH03
PH01 18 to 1
To PV01 of camera 2 PC board UV01

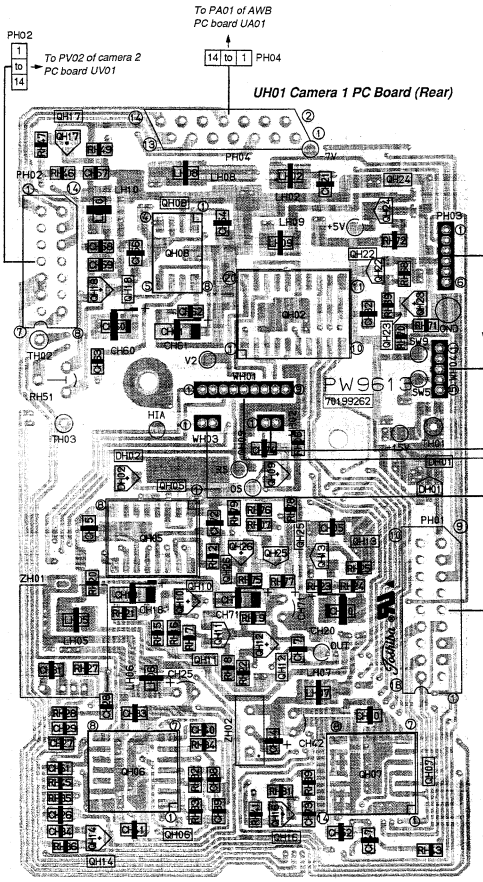
V:REC SP(#3000K)

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| QH15 | G-3 | 4.1 | 5.1 | 4.8 |
| QH19 | B-2 | 2.7 | 9.1 | 3.3 |
| QH20 | C-2 | 1.1 | 6.4 | 1.7 |
| QH21 | C-2 | 5.8 | 9.1 | 6.4 |

Note: "*" indicates when a halogen lamp is used.

| IC location | |
|---|---|
| QH05 | G-1 |
| QH04 | G-3 |

| Varioha location | |
|---|---|
| RH51 | D-1 |


UH01 Camera 1 PC Board (Rear)
To PA01 of AWB PC board UA01
PH02 1 to 14
To PV02 of camera 2 PC board UV01
14 to 1 PH04
PH03 1 to 6
To DC-DC converter
WH04 1 to 5
To PY02 of CCD buffer PC board UY01
WH02 1 2
To PX01 of iris drive PC board UX01
1 to 9 WH01
To PY01 of CCD buffer PC board UY01
1 2 WH03
To PX02 of iris drive PC board UX01
PH01 18 to 1
To PV01 of camera 2 PC board UV01
PW9613
70499262

| IC location | |
|---|---|
| QH02 | C-3 |
| QH05 | D-2 |
| QH06 | G-2 |
| QH07 | G-4 |
| QH08 | B-2 |

| Diode location | |
|---|---|
| DH01 | D-4 |
| DH02 | D-2 |

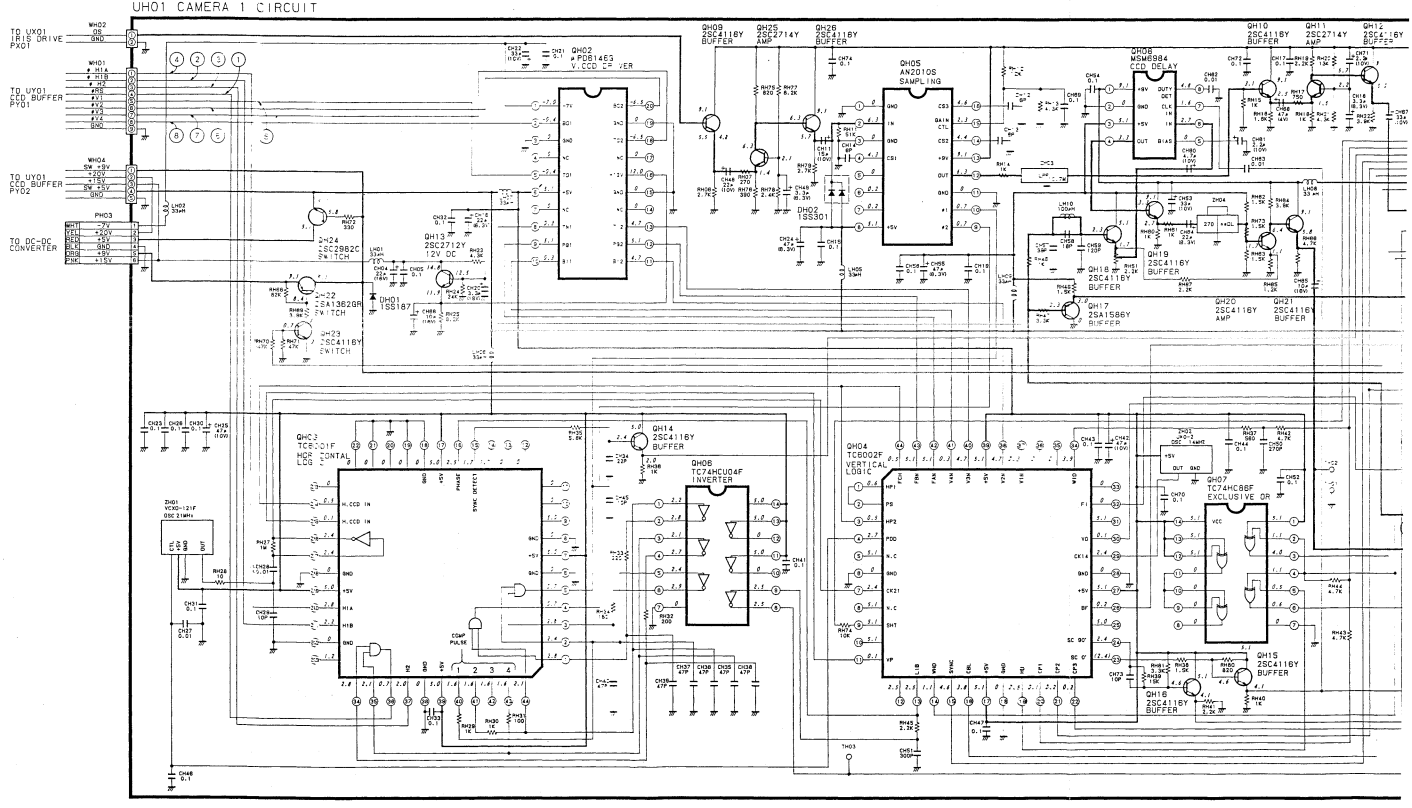
| Varioha location | |
|---|---|
| RH51 | D-1 |

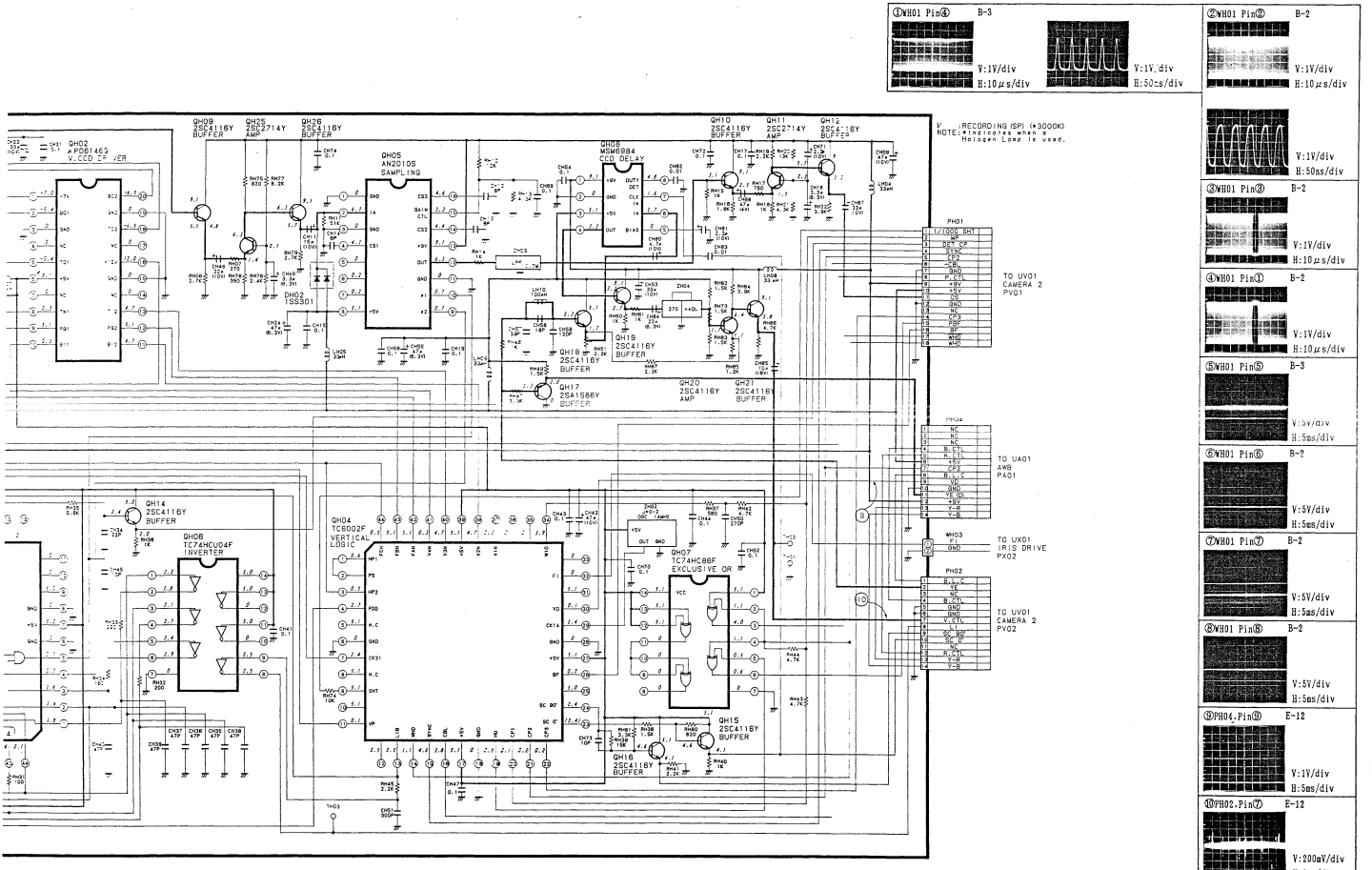
V:REC SP(#3000K)

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| QH09 | D-3 | 4.8 | 9.1 | 5.5 |
| QH10 | E-2 | 2.5 | 9.1 | 3.1 |
| QH11 | F-2 | 1.5 | 5.7 | 2.2 |
| QH12 | F-3 | 5.0 | 9.1 | 5.7 |
| QH13 | E-3 | 11.9 | 14.8 | 12.5 |
| QH14 | G-1 | 2.0 | 5.0 | 2.4 |
| QH16 | G-3 | 4.1 | 5.1 | 4.6 |
| QH17 | B-1 | 8.0 | 0 | 2.3 |
| QH18 | C-2 | 1.7 | 5.1 | 2.3 |
| QH22 | C-3 | 9.1 | 9.1 | 8.4 |
| QH23 | C-4 | 0 | 0.1 | 0.7 |
| QH24 | B-4 | 5.1 | 5.1 | 5.8 |
| QH25 | E-3 | 1.4 | 5.3 | 2.1 |
| QH26 | E-2 | 5.7 | 9.1 | 6.3 |

Note: "*" indicates when a halogen lamp is used.

## 5-13. CAMERA 1 CIRCUIT






①WH01 Pin④ B-3
V:1V/div
H:10μs/div
V:1V/div
H:50ns/div

②WH01 Pin② B-2
V:1V/div
H:10μs/div
V:1V/div
H:50ns/div

③WH01 Pin③ B-2
V:1V/div
H:10μs/div

④WH01 Pin① B-2
V:1V/div
H:10μs/div

⑤WH01 Pin⑤ B-3
V:5V/div
H:5ms/div

⑥WH01 Pin⑥ B-2
V:5V/div
H:5ms/div

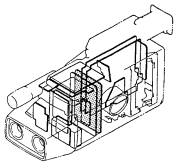
⑦WH01 Pin⑦ B-2
V:5V/div
H:5ms/div

⑧WH01 Pin⑧ B-2
V:5V/div
H:5ms/div

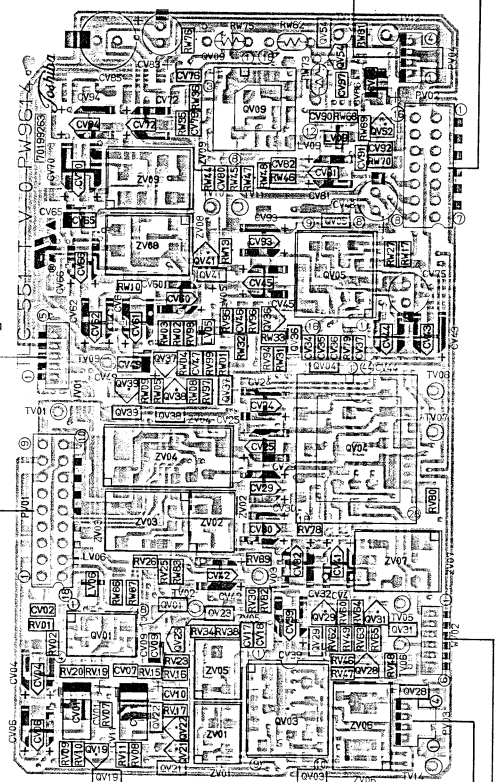
⑨PH04 Pin⑨ E-12
V:1V/div
H:5ms/div

⑩PH02 Pin⑦ E-12
V:200mV/div
H:2ms/div

## 5-14. CAMERA 2 PC BOARD



### UV01 Camera 2 PC Board (Front)


PV04
4 to 1
To W302 of video PC board U101
To PH02 camera 1 of PC board UH01
PV02
1 to 14
WV01
5 to 1
TO PX04 of iris drive PC board UX01
PV01
18 to 1
To PH01 of camera 1 PC board UH01
To P606 of M2 logic PC board U101
PV03
To PY04 of CCD buffer PC board UY01
WV02
1 to 6

V:REC SP(4500HX)

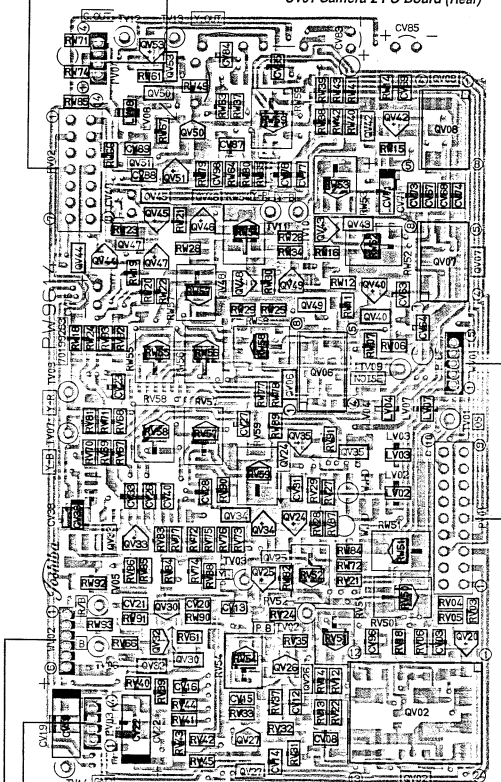
| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| QV21 | G-3 | 2.6 | 0 | 2 |
| QV22 | G-3 | 2.3 | 2.6 | 5 |
| QV23 | F-3 | 2 | 5.1 | 2.6 |
| QV26 | F-1 | 1.2 | 5 | 1.8 |
| QV29 | F-2 | 1.2 | 2.8 | 1.8 |
| QV31 | F-1 | 1.2 | 2.8 | 1.8 |
| QV36 | D-2 | 1.1 | 5 | 1.8 |
| QV37 | D-3 | 0.9 | 5.6 | 1.6 |
| QV38 | D-3 | 1.2 | 5.1 | 1.8 |
| QV39 | D-4 | 4.5 | 9.1 | 5.1 |
| QV41 | C-3 | 1.5 | 0 | 0.9 |
| QV52 | B-2 | 1.8 | 5 | 2.5 |
| QV54 | A-2 | 2.5 | 2.3 | 0.2 |

Note: "#"indicates when a halogen lamp is used.

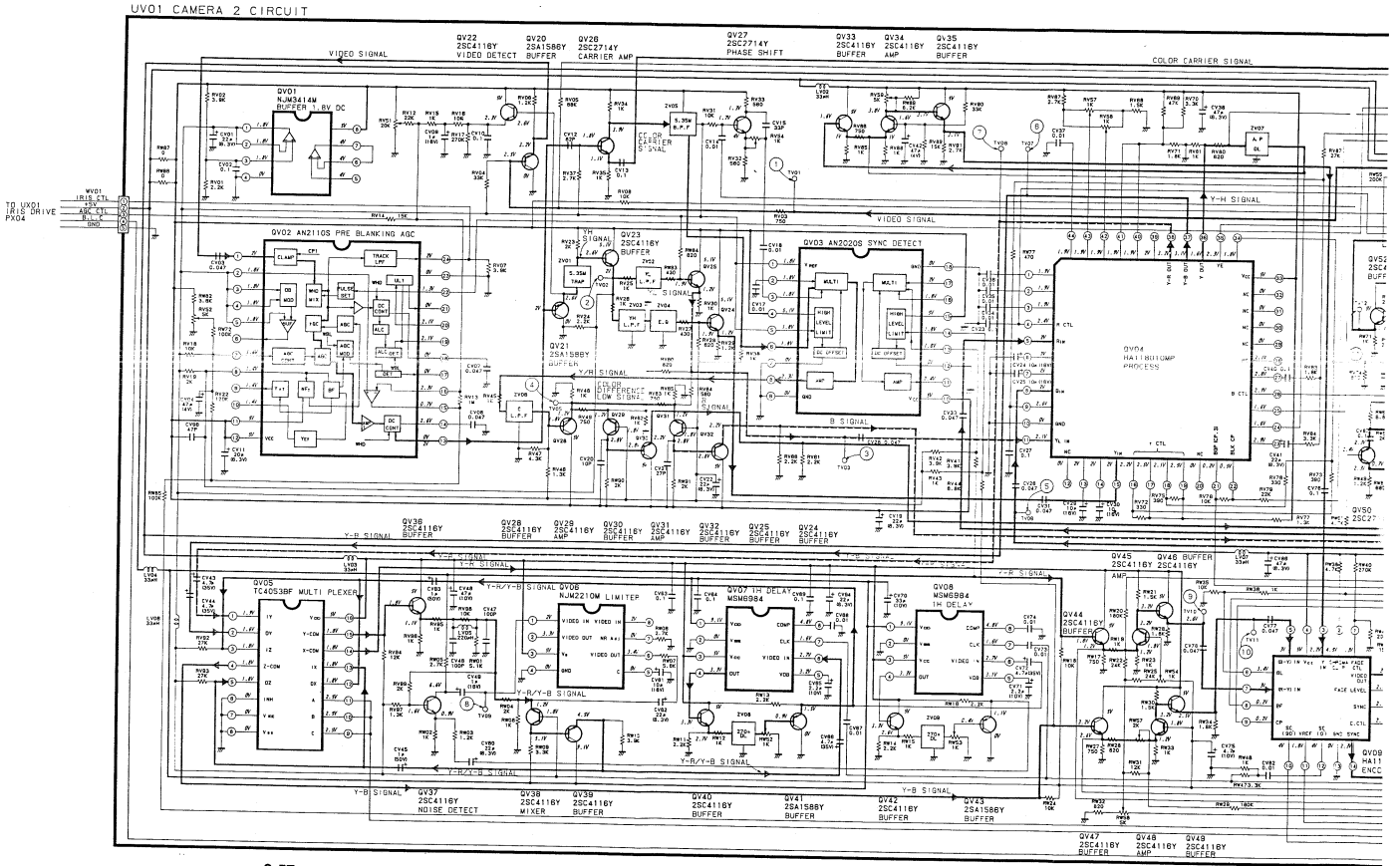
| IC locations | |
|---|---|
| QV01 | F-3 |
| QV03 | G-2 |
| QV04 | D-2 |
| QV05 | C-2 |
| QV09 | B-3 |

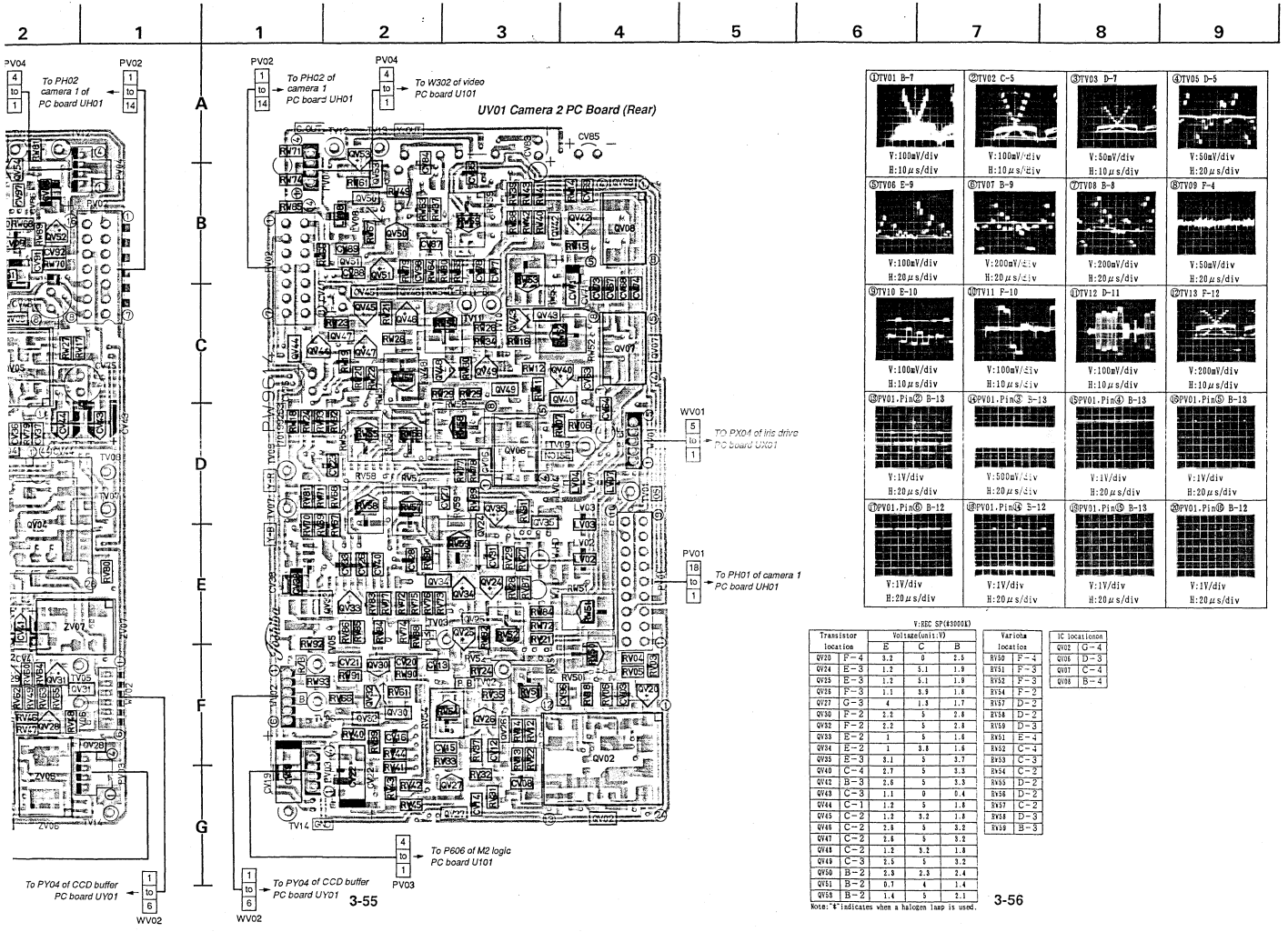


### UV01 Camera 2 PC Board (Rear)


PV02
1 to 14
To PH02 of camera 1 PC board UH01
PV04
4 to 1
To W302 of video PC board U101
WV01
5 to 1
TO PX04 of iris drive PC board UX01
PV01
18 to 1
To PH01 of camera 1 PC board UH01
To P606 of M2 logic PC board U101
PV03
To PY04 of CCD buffer PC board UY01
WV02
1 to 6

## 5-15. CAMERA 2 CIRCUIT






| ①TV01 B-7 | ②TV02 C-5 | ③TV03 D-7 | ④TV05 D-5 |
|---|---|---|---|
| V:100mV/div H:10μs/div | V:100mV/div H:10μs/div | V:50mV/div H:10μs/div | V:50mV/div H:20μs/div |
| ⑤TV06 E-9 | ⑥TV07 B-9 | ⑦TV08 B-8 | ⑧TV09 F-4 |
| V:100mV/div H:20μs/div | V:200mV/div H:20μs/div | V:200mV/div H:20μs/div | V:50mV/div H:20μs/div |
| ⑨TV10 E-10 | ⑩TV11 F-10 | ⑪TV12 D-11 | ⑫TV13 F-12 |
| V:100mV/div H:10μs/div | V:100mV/div H:10μs/div | V:100mV/div H:10μs/div | V:200mV/div H:10μs/div |
| ⑬PV01.Pin② B-13 | ⑭PV01.Pin③ B-13 | ⑮PV01.Pin④ B-13 | ⑯PV01.Pin⑤ B-13 |
| V:1V/div H:20μs/div | V:500mV/div H:20μs/div | V:1V/div H:20μs/div | V:1V/div H:20μs/div |
| ⑰PV01.Pin⑥ B-12 | ⑱PV01.Pin⑦ B-12 | ⑲PV01.Pin⑧ B-13 | ⑳PV01.Pin⑨ B-12 |
| V:1V/div H:20μs/div | V:1V/div H:20μs/div | V:1V/div H:20μs/div | V:1V/div H:20μs/div |

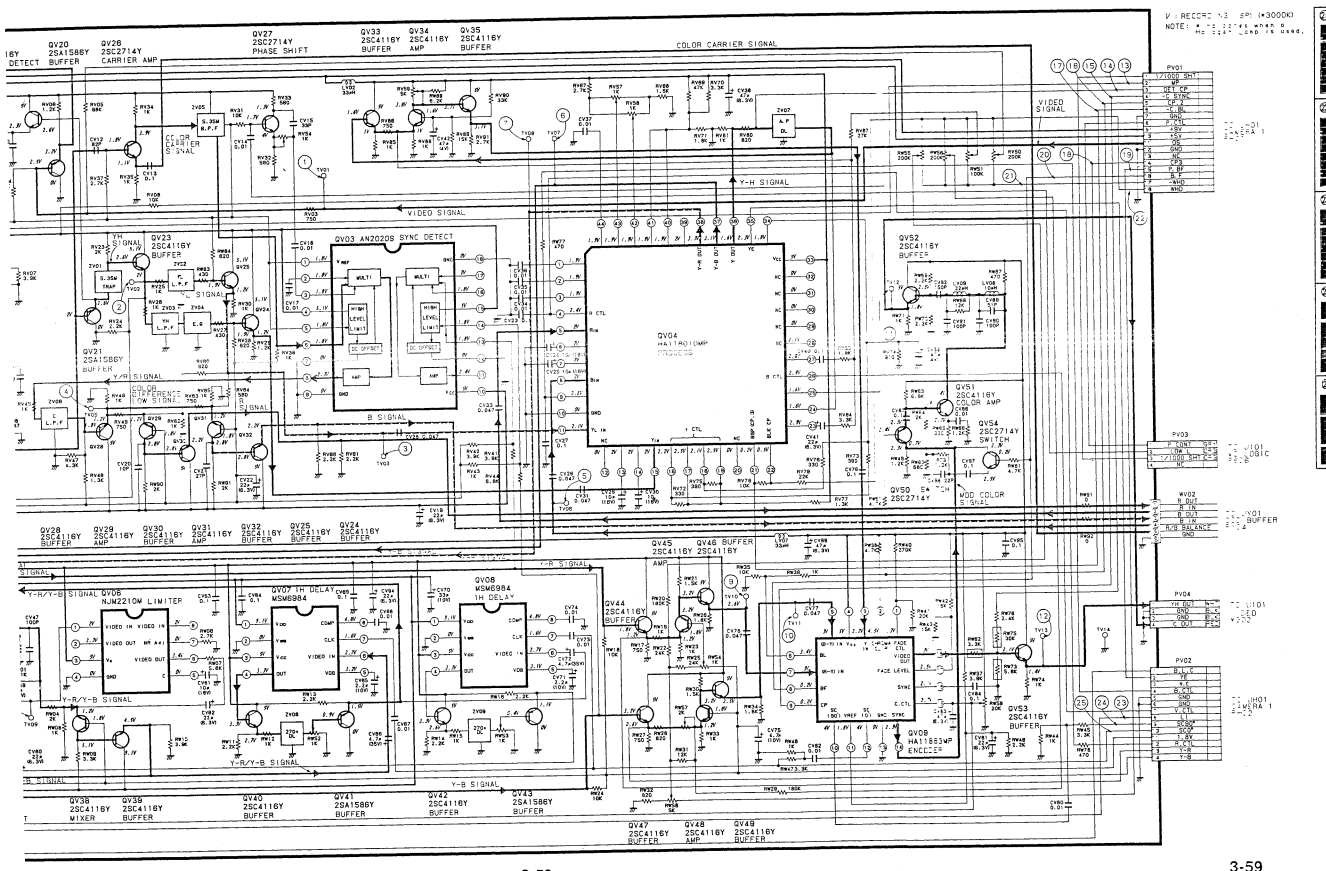
V:REC SP(*3000K)

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| QV20 | F-4 | 3.2 | 0 | 2.5 |
| QV24 | E-3 | 1.2 | 5.1 | 1.9 |
| QV25 | E-3 | 1.2 | 5.1 | 1.9 |
| QV26 | F-3 | 1.1 | 5.3 | 1.8 |
| QV27 | G-3 | 4 | 1.3 | 1.7 |
| QV30 | F-2 | 2.2 | 5 | 2.8 |
| QV32 | F-2 | 2.2 | 5 | 2.8 |
| QV33 | E-2 | 1 | 5 | 1.6 |
| QV34 | E-2 | 1 | 3.8 | 1.6 |
| QV35 | E-3 | 3.1 | 5 | 3.7 |
| QV40 | C-4 | 2.7 | 5 | 3.3 |
| QV42 | B-3 | 2.6 | 5 | 3.3 |
| QV43 | C-3 | 1.1 | 0 | 0.4 |
| QV44 | C-1 | 1.2 | 5 | 1.8 |
| QV45 | C-2 | 1.2 | 3.2 | 1.8 |
| QV46 | C-2 | 2.8 | 5 | 3.2 |
| QV47 | C-2 | 2.6 | 5 | 3.2 |
| QV48 | C-2 | 1.2 | 3.2 | 1.8 |
| QV49 | C-3 | 2.5 | 5 | 3.2 |
| QV50 | B-2 | 2.8 | 2.3 | 2.4 |
| QV51 | B-2 | 0.7 | 4 | 1.4 |
| QV58 | B-2 | 1.4 | 5 | 2.1 |

Note:"*"indicates when a halogen lamp is used.

| Variable location | |
|---|---|
| RV50 | F-4 |
| RV51 | F-3 |
| RV52 | F-3 |
| RV54 | F-2 |
| RV57 | D-2 |
| RV58 | D-2 |
| RV59 | D-3 |
| RV61 | E-4 |
| RV62 | C-4 |
| RV63 | C-3 |
| RV64 | C-2 |
| RV65 | D-2 |
| RV66 | D-2 |
| RV67 | C-2 |
| RV68 | D-3 |
| RV69 | B-3 |

| IC location | |
|---|---|
| QV02 | G-4 |
| QV06 | D-3 |
| QV07 | C-4 |
| QV08 | B-4 |




①PV01.Pin⑪ C-12
V:1V/div
H:20μs/div

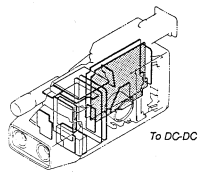
②PV01.Pin⑫ C-12
V:1V/div
H:20μs/div

③PV02.Pin⑨ F-13
V:1V/div
H:20μs/div

④PV02.Pin⑨ F-13
V:500mV/div
H:20μs/div

⑤PV02.Pin⑩ F-13
V:500mV/div
H:20μs/div

## 11. MOTHER 1 PC BOARD (M1 LOGIC, SERVO, AUDIO AND PRE AMP CIRCUITS)



PRE AMP

V:playback (V):recording

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| Q103 | B-3 | 0 (0) | 0 (0) | 0.7 (0) |
| Q104 | B-3 | 0 (0) | 0 (0) | 0.7 (0) |
| Q105 | C-3 | 0 (0) | 0 (0) | 0.7 (0) |
| Q106 | C-3 | 0 (0) | 0 (0) | 0.7 (0) |

SERVO

V :playback (V):recording Y:cue/review (Y):FF/rewind

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| Q506 | F-3 | 5.1(5.1) REV (5.1) 5.1 | 5.1(5.1) REV (5.1) 0 | 0 (0) REV (0) 5.6 |

M1 LOGIC

| Transistor location | |
|---|---|
| Q605 | E-2 |
| Q606 | D-4 |
| Q607 | E-2 |
| Q608 | E-2 |
| Q609 | E-2 |

| Diode location | |
|---|---|
| D601 | D-1 |
| D603 | E-1 |
| D604 | D-1 |
| D605 | E-2 |
| D606 | E-2 |

| IC location | |
|---|---|
| Q602 | C-2 |

SERVO

| IC location | |
|---|---|
| Q503 | E-3 |
| Q224 | F-2 |

| Adjusting VR location | |
|---|---|
| R550 | G-4 |
| R552 | G-3 |

| Diode location | |
|---|---|
| D502 | F-2 |

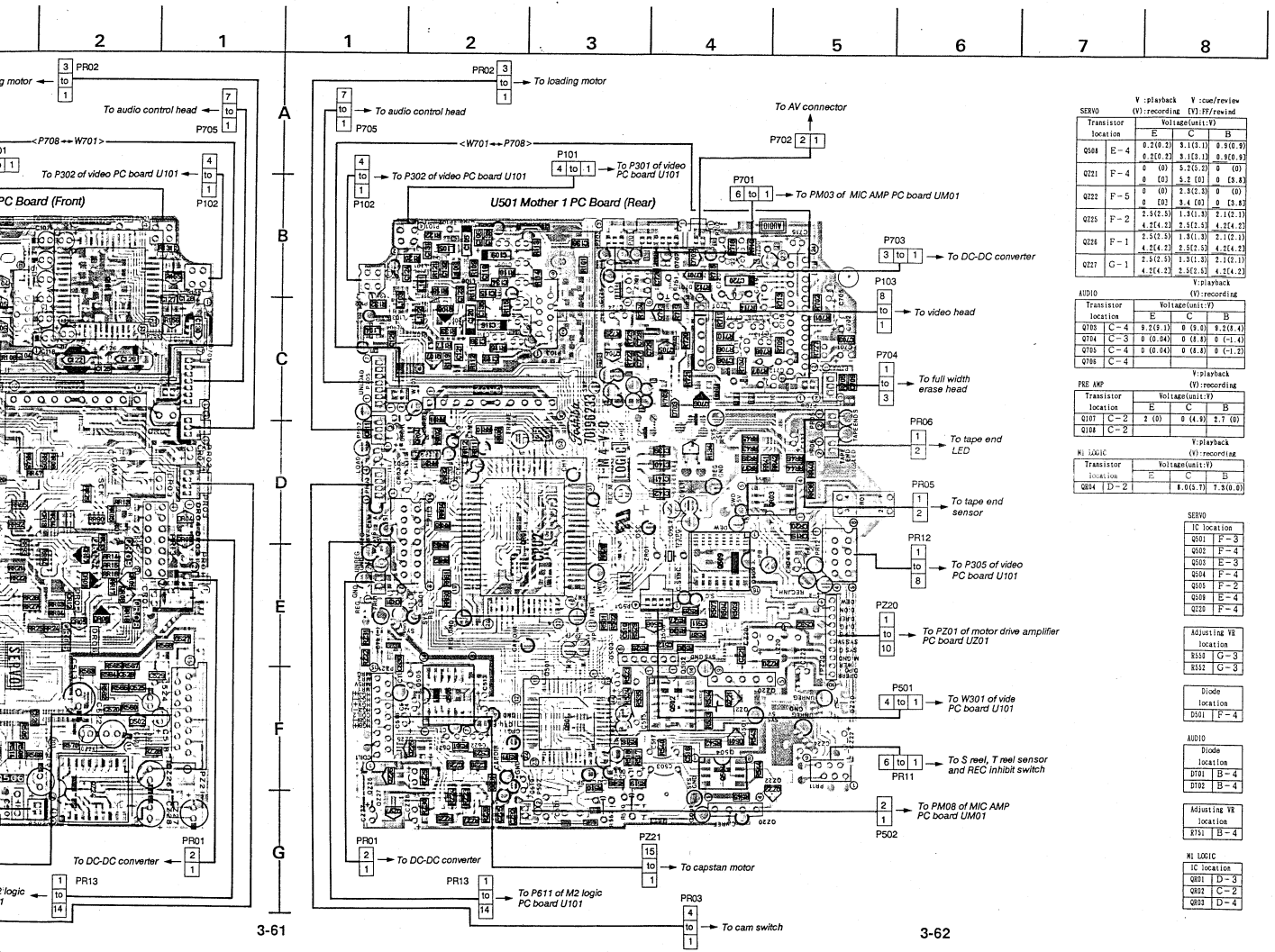
PRE AMP

| IC location | |
|---|---|
| Q101 | B-2 |
| Q102 | D-4 |

| Adjusting VR location | |
|---|---|
| R155 | B-1 |
| R156 | C-2 |

AUDIO

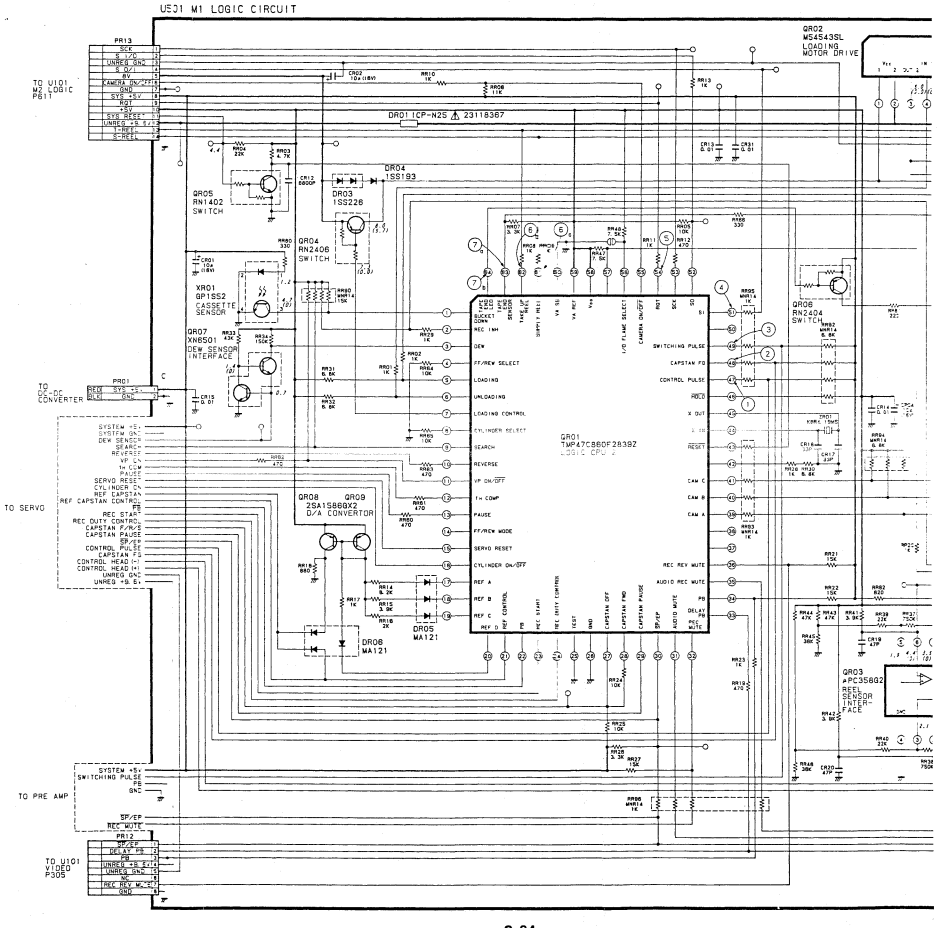
| IC location | |
|---|---|
| Q701 | B-5 |
| Q702 | C-4 |

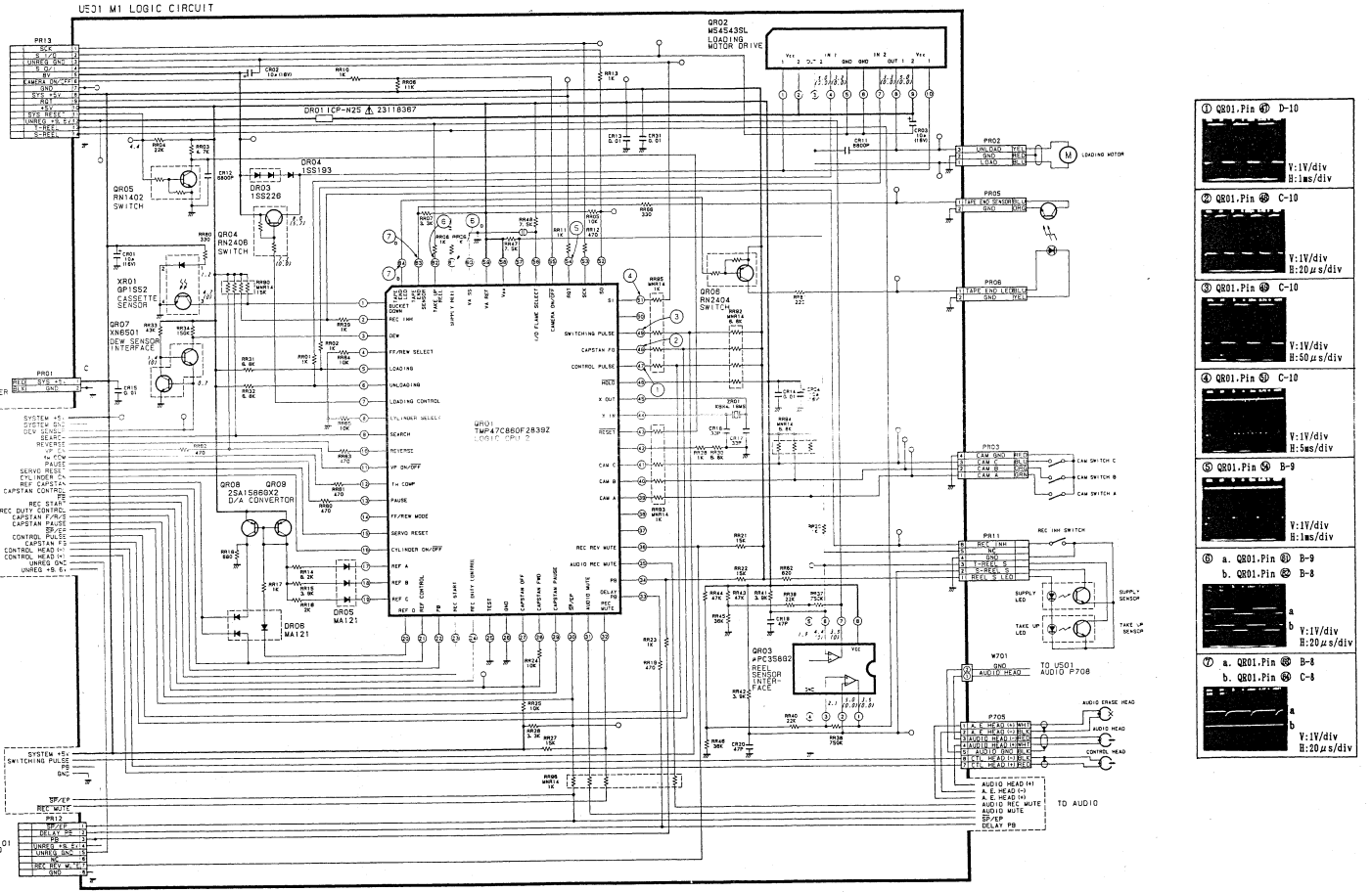

2
1
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
U501 Mother 1 PC Board (Rear)
P102 PC Board (Front)
To audio control head
To P302 of video PC board U101
To loading motor
To AV connector
To P301 of video PC board U101
To P303 of MIC AMP PC board UM01
To DC-DC converter
To video head
To full width erase head
To tape end LED
To tape end sensor
To P305 of video PC board U101
To PZ01 of motor drive amplifier PC board UZ01
To W301 of vide PC board U101
To S reel, T reel sensor and REC inhibit switch
To PM08 of MIC AMP PC board UM01
To capstan motor
To P611 of M2 logic PC board U101
To cam switch
P705
P102
P101
P702
P701
P703
P103
P704
PR06
PR05
PR12
PZ20
P501
PR11
P502
PR01
PZ21
PR13
PR03
<W701↔P708>
<P708↔W701>
SERVO
AUDIO
PRE AMP
M1 LOGIC
V :playback V :cue/review
(V):recording (V):FF/rewind
(V):playback
(V):recording
IC location
Diode location
Adjusting VR location

## 7-2. M1 LOGIC CIRCUIT

### Microcomputer Terminal Voltage QR01 (TMP47C860F2839Z)

| Pin | Mode / Item | Stop | Play-back | Rec. | FF | Rew. | Rec. FF | Play-back Rew. | Still | Rec. Pause | Rec. Rew. | Rec. Lock | No cas-sette | Safety stop |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Bucket down | | | | | | | | | | | | | |
| 2 | REC inhibit | | | | | | | | | | | | | |
| 3 | Dew | | | | | | | | | | | | | |
| 4 | FF/rewind select | | | | | | | | | | | | | |
| 5 | Loading | L | L | L | L | L | L | L | L | L | L | L | L | L |
| 6 | Unloading | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 7 | Loading control | H,8.4V | L,0V | L,0V | H,8.4V | H,8.4V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | H,8.4V | H,8.4V |
| 8 | Cylinder select | | | | | | | | | | | | | |
| 9 | Search | L,0V | L,0V | L,0V | L,0V | L,0V | H,5V | H,5V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 10 | Reverse | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | H,5V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 11 | Pseudo V ON/OFF | L,0V | L,0V | L,0V | L,0V | L,0V | H,5V | H,5V | H,5V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 12 | fH compensation | L,0V | L,0V | L,0V | L,0V | L,0V | H,5V | H,5V | H,5V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 13 | Pause | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | H,5V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 14 | FF/REW mode | H | H | H | H | H | H | H | H | H | H | H | H | H |
| 15 | Servo reset | H | H | H | H | H | H | H | H | H | H | H | H | H |
| 16 | Cylinder ON/OFF | L,0V | H,5V | H,5V | L,0V | L,0V | H,5V | H,5V | H,5V | H,5V | H,5V | L,0V | L,0V | L,0V |
| 17 | Reference A | L,0V | L,0V | L,0V | L,0V H,5V | L,0V H,5V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 18 | Reference B | L,0V | L,0V | L,0V | L,0V H,5V | L,0V H,5V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 19 | Reference C | L,0V | L,0V | L,0V | L,0V H,5V | L,0V H,5V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 20 | Reference D | L | L | L | L L | L L | L | L | L | L | L | L | L | L |
| 21 | Reference control | L,0V | H,2.6V | H,2.6V | L,0V | L,0V | H,2.6V | H,2.6V | L,0V | L,0V | H,2.6V | L,0V | L,0V | L,0V |
| 22 | Playback | H,5V | L,0V | H,5V | H,5V | H,5V | L,0V | L,0V | L,0V | H,5V | L,0V | H,5V | H,5V | H,5V |
| 23 | Recording start | L,0V | L,0V | H,5V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 24 | Record duty control | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 25 | Test | | | | | | | | | | | | | |
| 26 | Ground | | | | | | | | | | | | | |
| 27 | Capstan OFF | H,5V | H,5V | H,5V | H,2.5V | L,0V | H,5V | L,0V | H,5V | H,5V | H,5V | H,5V | H,5V | H,5V |
| 28 | Capstan FWD | H,5V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | H,5V | H,5V | L,0V | H,5V | H,5V | H,5V |
| 29 | Capstan pause | L,0V | H,2.5V | H,2.5V | L,0V | L,0V | H,2.5V | H,2.5V | L,0V | L,0V | H,2.5V | L,0V | L,0V | L,0V |
| 30 | SP/EP | | | | | | | | | | | | | |
| 31 | Audio mute | L,0V | L,0V | L,0V | L,0V | L,0V | H,5V | H,5V | H,5V | H,5V | L,0V | L,0V | L,0V | L,0V |
| 32 | Record mute | L,0V | L,0V | H,5V | L,0V | L,0V | L,0V | L,0V | H,5V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 33 | Delayed playback | L,0V | H,5V | L,0V | L,0V | L,0V | H,5V | H,5V | H,5V | H,5V | L,0V | L,0V | L,0V | L,0V |
| 34 | Playback | L,0V | H,5V | L,0V | L,0V | L,0V | H,5V | H,5V | H,5V | L,0V | H,5V | L,0V | L,0V | L,0V |
| 35 | Audio mute | H,5V | H,5V | L,0V | H,5V | H,5V | H,5V | H,5V | H,5V | H,5V | H,5V | H,5V | H,5V | H,5V |
| 36 | Record review mute | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V | L,0V |
| 37 | Video S/N select | | | | | | | | | | | | | |
| 38 | Audio S/N select | | | | | | | | | | | | | |
| 39 | Cam A | | | | | | | | | | | | | |
| 40 | Cam B | | | | | | | | | | | | | |
| 41 | Cam C | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | |
| 43 | Reset | | | | | | | | | | | | | |
| 44 | OSC input | | | | | | | | | | | | | |
| 45 | OSC output | | | | | | | | | | | | | |
| 46 | Hold | | | | | | | | | | | | | |
| 47 | Control pulse | | | | | | | | | | | | | |
| 48 | Capstan FG | | | | | | | | | | | | | |
| 49 | SW pulse | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | |
| 51 | Serial data input | | | | | | | | | | | | | |
| 52 | Serial data output | | | | | | | | | | | | | |
| 53 | Serial data shift clock | | | | | | | | | | | | | |
| 54 | Serial transfer request | | | | | | | | | | | | | |
| 55 | Camera ON/OFF | H,5V | L,0V | H,5V | H,5V | H,5V | L,0V | L,0V | L,0V | H,5V | H,5V | H,5V | H,5V | H,5V |
| 56 | 1/0 fiame select | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | |
| 58 | Power | | | | | | | | | | | | | |
| 59 | Reference voltage for A/D conversion | | | | | | | | | | | | | |
| 60 | Reference ground for A/D conversion | | | | | | | | | | | | | |
| 61 | Supply reel | | | | | | | | | | | | | |
| 62 | Take-up reel | | | | | | | | | | | | | |
| 63 | Tape end sensor | | | | | | | | | | | | | |
| 64 | Tape end LED | | | | | | | | | | | | | |






① QR01.Pin 47 D-10
V:1V/div
H:1ms/div

② QR01.Pin 48 C-10
V:1V/div
H:20μs/div

③ QR01.Pin 49 C-10
V:1V/div
H:50μs/div

④ QR01.Pin 51 C-10
V:1V/div
H:5ms/div

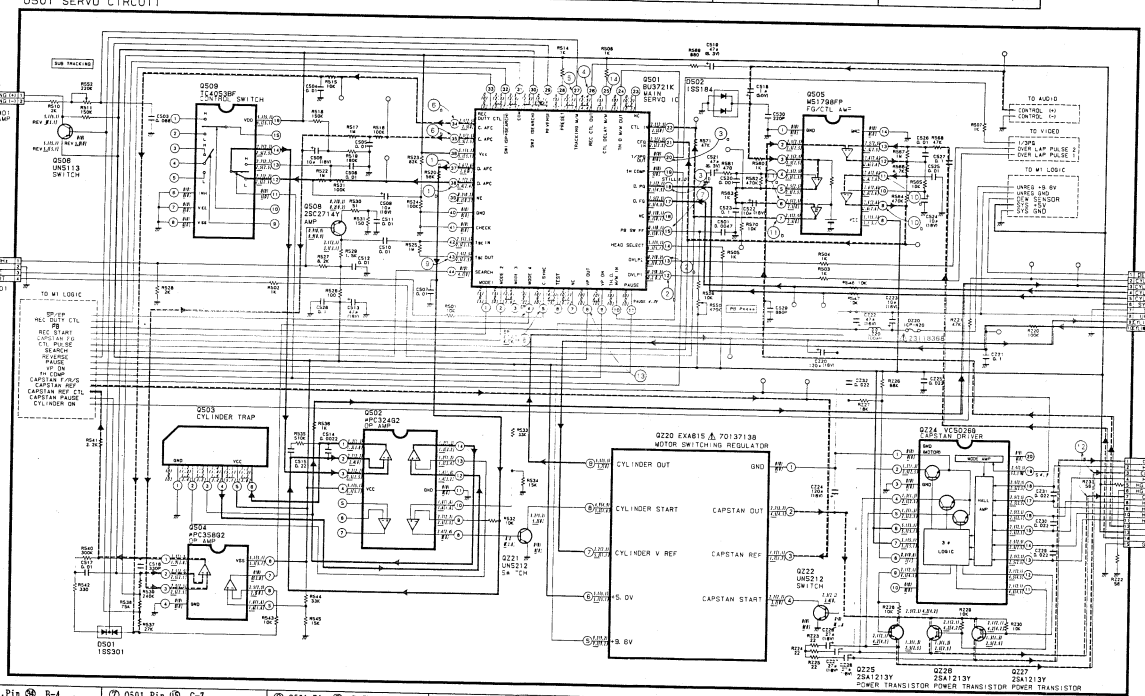
⑤ QR01.Pin 54 B-9
V:1V/div
H:1ms/div

⑥ a. QR01.Pin 61 B-9
b. QR01.Pin 62 B-8
V:1V/div
H:20μs/div

⑦ a. QR01.Pin 68 B-8
b. QR01.Pin 64 C-8
V:1V/div
H:20μs/div

## 8-2. SERVO CIRCUIT

U501 SERVO CIRCUIT




① a. Q501.Pin ㊲ C-4
b. Q501.Pin ㊳ C-4
a.
b. V:2V/div H:0.2μs/div

② a. Q501.Pin ⑯ C-6
b. Q501.Pin ⑫ D-6
a.
b. V:2V/div H:2ms/div

③ a. Q501.Pin ㉔ B-7
b. Q501.Pin ⑱ C-6
a.
b. V:2V/div H:20ms/div

④ Q501.Pin ㉖ B-6
V:1V/div H:10ms/div

⑤ Q501.Pin ㉗ B-6
V:1V/div H:10ms/div

⑥ a. Q501.Pin ㊴ B-4
b. Q501.Pin ㊵ B-4
a.
b. V:2V/div H:0.2μs/div

⑦ Q501.Pin ⑮ C-7
V:1V/div H:5ms/div

⑧ Q501.Pin ㉕ D-5
V:1V/div H:0.1ms/div

⑨ Q501.Pin ㊽ C-4
V:1V/div H:0.2μs/div

⑩ a. Q505.Pin ⑪ C-8
b. Q505.Pin ⑨ C-8
a. V:1V/div
b. V:2V/div H:0.5ms/div

⑪ a. Q505.Pin ⑤ C-7
b. Q505.Pin ⑦ C-7
a. V:1V/div
b. V:2V/div H:5ms/div

⑫ PZ21.Pin ①、③、⑦ E-10
V:0.5V/div H:20ms/div

⑱ Q501.Pin ㉓ D-6
V:2V/div H:5ms/div

⑭ Q501.Pin ㉙ B-6
V:1V/d H:10ms

5 6 7 8 9 10 11 12 13 14 15

-6
-6

2V/div
2ms/div

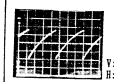
③ a. Q501.Pin ㉔ B-7
b. Q501.Pin ⑱ C-6

a.
b.
V:2V/div
H:20ms/div

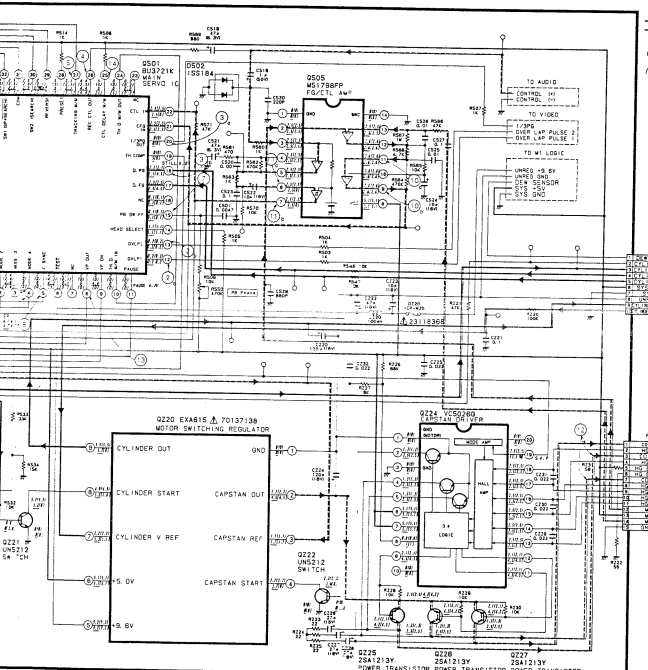
④ Q501.Pin ㉕ B-6

V:1V/div
H:10ms/div

⑮ Q501.Pin ㉗ B-6



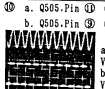
V:1V/div
H:10ms/div




⑨ C-4

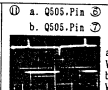
V:1V/div
H:0.2μs/div

⑩ a. Q505.Pin ⑪ C-8
b. Q505.Pin ⑨ C-8



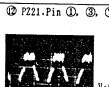
a.
V:1V/div
b.
V:2V/div
H:0.5ms/div

⑪ a. Q505.Pin ⑤ C-7
b. Q505.Pin ⑦ C-7



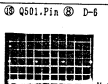
a.
V:1V/div
b.
V:2V/div
H:5ms/div

⑫ P221.Pin ①, ③, ⑦ E-10



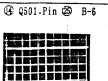
V:0.5V/div
H:20ms/div

⑱ Q501.Pin ⑧ D-6



V:2V/div
H:5ms/div

④ Q501.Pin ㉖ B-6



V:1V/div
H:10ms/div

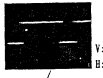


## BU3721K

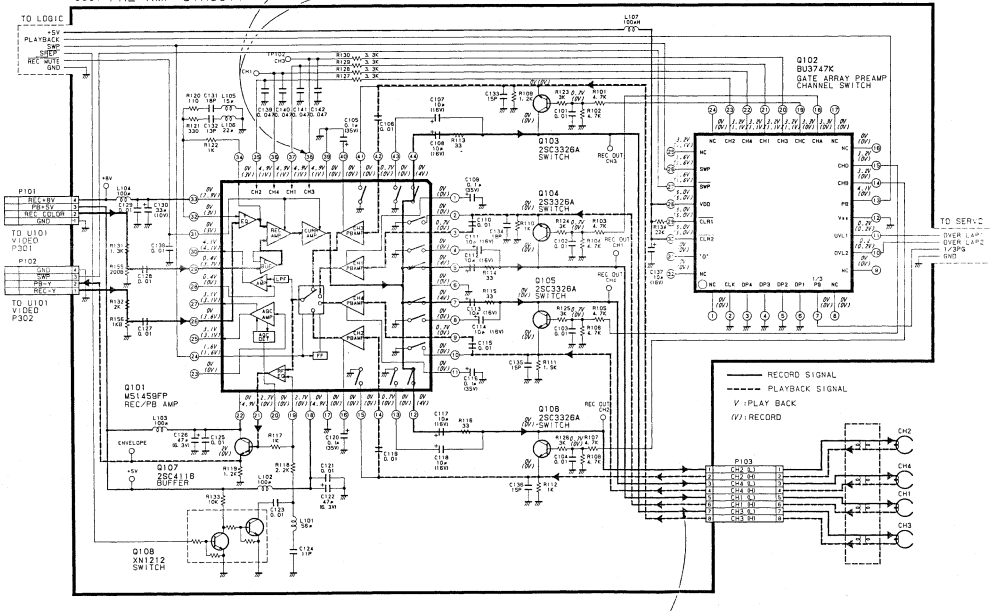
| PIN | NAME | CONDITIONS |
|---|---|---|
| 1 | MODE 1 | MODE 1 2 / PB L L / REC H H / ABT/ H L — MODE 3 4 / SP OPEN L / EP OPEN H |
| 2 | MODE 2 | |
| 3 | MODE 3 | |
| 4 | MODE 4 | |
| 5 | C. SYNC | 4 Vp-p |
| 6 | TEST | OPEN |
| 7 | NC | |
| 8 | VP OUT | in CUE/REV/STILL mode: 4.2V or more; 0.3 or less; 16.7 msec; Others: L |
| 9 | VP ON | in CUE/REV/STILL mode: H; Others: L |
| 10 | TH. D.MM IN | 30 Hz; 33.3 msec; 4.5V or more; 0.3 or less |
| 11 | PAUSE | in Stil mode: H; Others: L |
| 12 | OVLP 1 | 60 Hz; 16.7 msec; 4.2V or more; 0.3 or less |
| 13 | OVLP 2 | 60 Hz; 16.7 msec; 4.2V or more; 0.3 or less |
| 14 | HEAD SEL. | H |
| 15 | PB SW FF | 16.7 msec; 2.8V; 0.2 msec; 0.2 |
| 16 | NC | |
| 17 | D. FG | 1760 Hz; 3.7V or more; 1.5V or less |
| 18 | D. PG | 44.97 Hz; 3.7V or more; 1.5V or less |
| 19 | fH COMP | in CUE/REV/STILL mode: H; Others: L |
| 20 | 1/3 PG OUT | 15 Hz; 66.7 msec; 4.5V or more; 0.3 or less |
| 21 | C. FG IN | SP 2113 Hz; EP 704 Hz; 4.0V or more; 0.5V or less |
| 22 | CTL IN | 30 Hz; 4.0V or more; 0.5V or less |

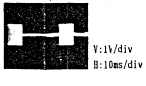
| | | |
|---|---|---|
| 23 | NC | |
| 24 | TH. D. MM OUT | 30 Hz; 33.3 msec; 4.5V or more; 0.3 or less |
| 25 | CTL DLY MM | 30 Hz; 33.3 msec; 5V |
| 26 | REC CTL OUT | 30 Hz; 33.3 msec; 4.0V or more; 0.5 or less |
| 27 | TRACKING MM | 3.0V; 33.3 Hz |
| 28 | P. SET | H |
| 29 | REV | in REV mode: H; Others: L |
| 30 | SW2 (SER) | |
| 31 | COM | |
| 32 | SW1 (SP/EP) | |
| 33 | REC DUTY CTL | L |
| 34 | C. APC | approx. 2.1 sec; 4.8V or more in STOP/PAU REW mode: L; 0.1 or less |
| 35 | C. APC | approx. 1.5 sec; 4.8V or more; 0.1 or less |
| 36 | VCC | 5V DC |
| 37 | D. APC | approx. 1.1 sec; 4.8V or more in STOP/PAU REW mode: L; 0.1 or less |
| 38 | D. APC | approx. 1.1 sec; 4.8V or more; 0.1 or less |
| 39 | NC | |
| 40 | GND | 0V DC |
| 41 | CHECK | 0V DC |
| 42 | FSC IN | 3.58 MHz; approx. 3.5 Vp-p |
| 43 | FSC OUT | 3.58 MHz; approx. 5Vp-p |
| 44 | SER | in CUE/REV mode: H; Others: L |

## 9-2. PRE AMP CIRCUIT



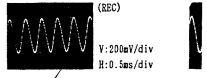

U501 PRE AMP CIRCUIT



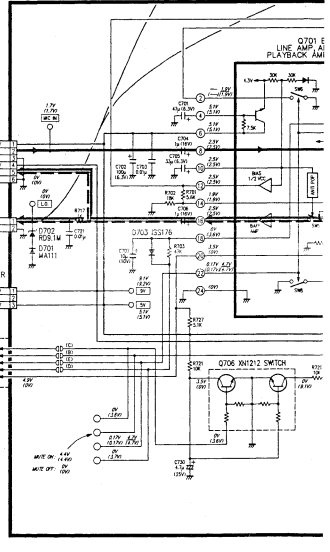





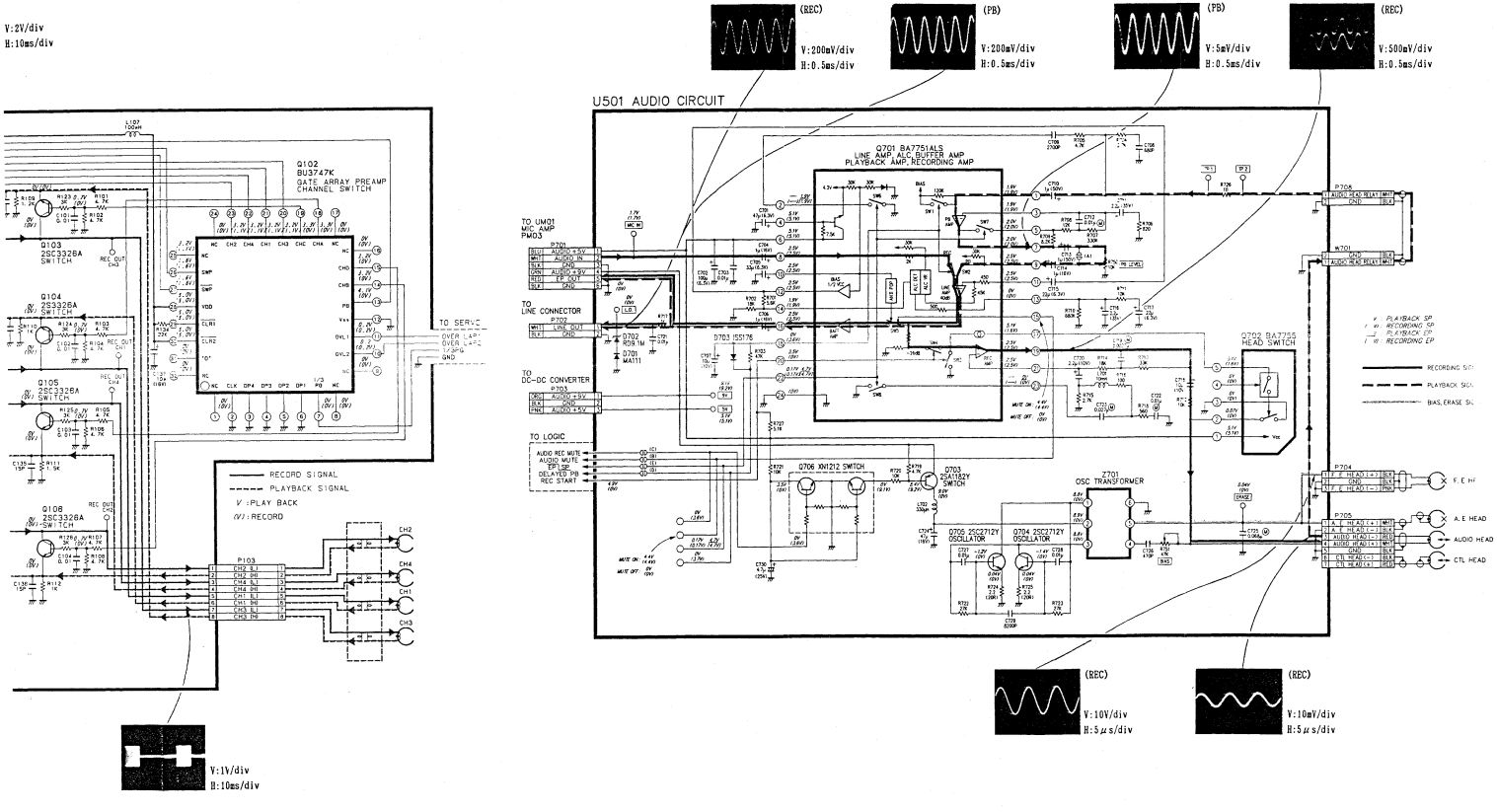

## 10-2. AUDIO CIRCUIT



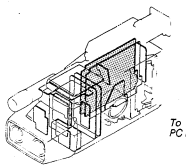

U501 AUDIO CIRCUIT



## 10-2. AUDIO CIRCUIT



## 12. MOTHER 2 PC BOARD (VIDEO AND M2 LOGIC CIRCUITS)



V:Playback SP (V):recording SP
V:playback EP [V]:recording EP

VIDEO

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| Q301 | D-4 | 2.6(1.6) | 0 (0) | 1.9(0.9) |
| Q305 | B-1 | | | |
| Q308 | B-2 | | | |
| Q309 | B-3 | | | |
| Q310 | C-2 | | | |
| Q311 | C-2 | 0 (0) | 0 (0) | 0 (0) 3.3(3.3) |
| Q314 | C-2 | | | |
| Q317 | B-3 | 3.1(3.0) | 0 (0) | 2.4(2.4) |
| Q318 | C-4 | 2.5(2.4) | 7.0(7.0) | 3.1(3.0) |
| Q319 | C-3 | 2.5(3.0) | 0 (0) | 2.4(2.4) |

V:playback
(V):recording

M2 LOGIC

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| Q607 | F-4 | 0 | 4.8 | 9.6 |
| Q608 | E-4 | 4.7 | 4.7 | 0.6 |
| Q610 | F-3 | 4.7 | 4.7 | 4.6 |
| Q615 | F-3 | | | |
| Q616 | E-3 | | | |
| Q630 | E-3 | | | |
| Q631 | E-4 | 0 | 2.2(2.6) | 4.7 |
| Q802 | E-4 | | | |

M2 LOGIC

| Diode location | |
|---|---|
| D601 | E-4 |
| D603 | E-4 |
| D606 | E-3 |
| D608 | E-3 |
| D609 | E-3 |
| D610 | E-1 |
| D612 | F-4 |
| D614 | E-3 |

VIDEO

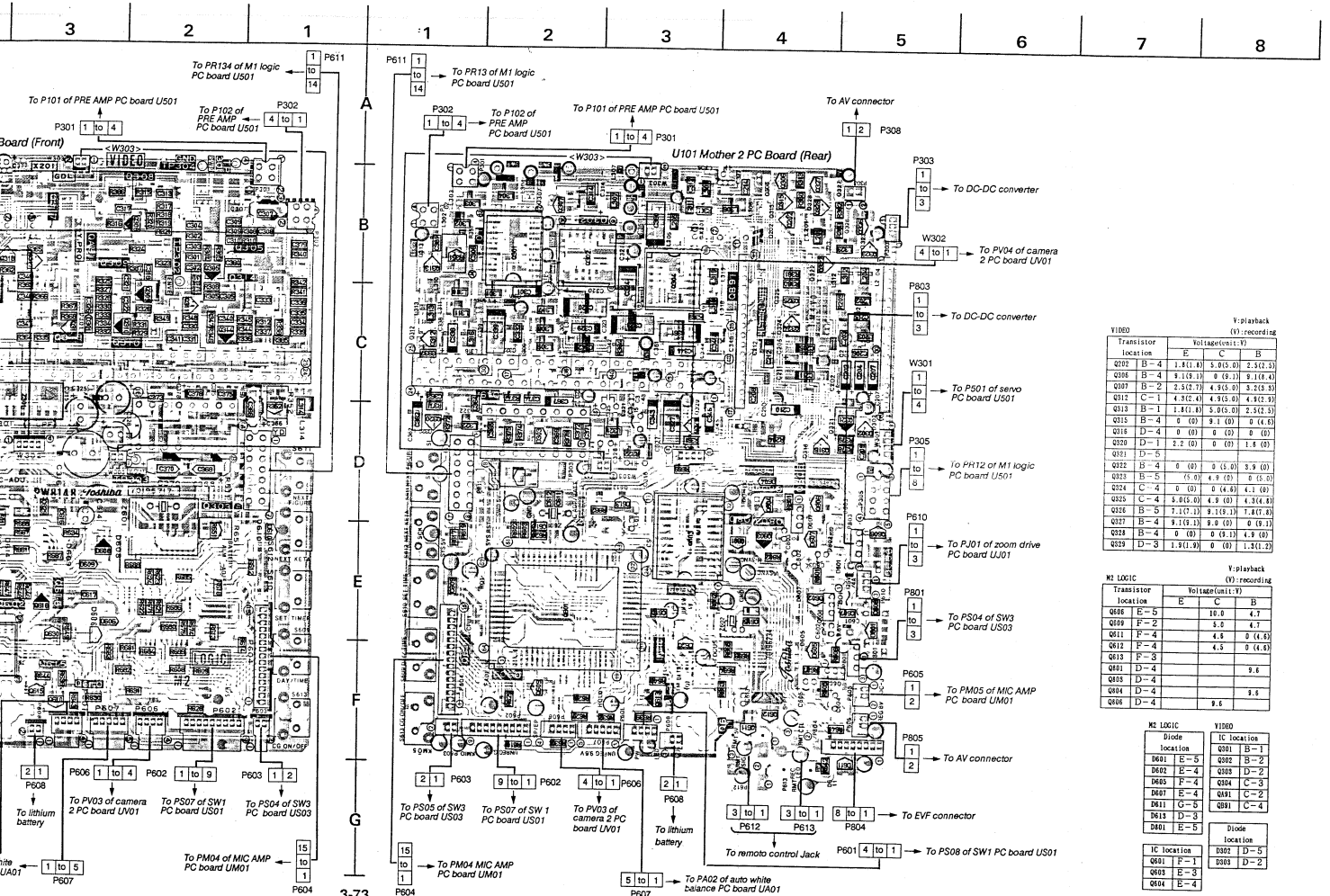
| IC location | |
|---|---|
| Q303 | D-2 |
| Q491 | B-3 |
| Q891 | C-4 |

| Diode location | |
|---|---|
| D501 | C-3 |
| D504 | B-4 |

| IC location | |
|---|---|
| Q602 | E-3 |
| Q605 | F-4 |

| Adjusting VR location | |
|---|---|
| R851 | E-2 |
| R851 | E-4 |

U101 Mother 2 PC Board (Front)
To AV connector
P308
To P101 of PRE AMP PC board U501
P301
To P102 of PRE AMP PC board U501
P302
To PR134 of M1 logic PC board U501
P611
To DC-DC converter
P303
To PV04 camera 2 PC board UV01
W302
To DC-DC converter
P803
To P501 of servo PC board U501
W301
To PR12 of M1 logic PC board U501
P305
To PJ01 of zoom drive PC board UJ01
P610
To PS04 of SW3 PC board US03
P801
To PM05 of MIC AMP PC board UM01
P605
To AV connector
P805
To EVF connector
P804
P613
P612
To PS08 of SW 1 PC board US01
P601
To remote control jack
To PA02 of auto white balance PC board UA01
P607
To lithium battery
P608
To PV03 of camera 2 PC board UV01
P606
To PS07 of SW1 PC board US01
P602
To PS04 of SW3 PC board US03
P603
To PM04 of MIC AMP PC board UM01
P604
To PR13 of M1 logic PC board U501
U101 Mother 2 PC Board (Rea
To PS05 of SW3 PC board US03
To PS07 of SW 1 PC board US01
To PV03 of camera 2 PC board UV01
To lithium battery
To remoto control Ja
To PM04 MIC AMP PC board UM01
To PA02 of auto white balance PC board UA01




VIDEO

V:playback
(V):recording

| Transistor location | | Voltage(unit:V) | | |
|---|---|---|---|---|
| | | E | C | B |
| Q202 | B-4 | 1.8(1.8) | 5.0(5.0) | 2.5(2.5) |
| Q306 | B-4 | 9.1(9.1) | 0 (9.1) | 9.1(8.4) |
| Q307 | B-2 | 2.3(2.7) | 4.9(5.0) | 3.2(5.9) |
| Q312 | C-1 | 4.3(2.4) | 4.9(5.0) | 4.9(2.9) |
| Q313 | B-1 | 1.8(1.8) | 5.0(5.0) | 2.5(2.5) |
| Q315 | B-4 | 0 (0) | 9.1 (0) | 0 (4.6) |
| Q316 | D-4 | 0 (0) | 0 (0) | 0 (0) |
| Q320 | D-1 | 2.2 (0) | 0 (0) | 1.8 (0) |
| Q321 | D-5 | | | |
| Q322 | B-4 | 0 (0) | 0 (5.0) | 5.9 (0) |
| Q323 | B-5 | (5.0) | 4.8 (0) | 0 (5.0) |
| Q324 | C-4 | 0 (0) | 0 (4.6) | 4.1 (0) |
| Q325 | C-4 | 5.0(5.0) | 4.9 (0) | 4.3(4.8) |
| Q326 | B-5 | 7.1(7.1) | 9.1(9.1) | 7.8(7.8) |
| Q327 | B-4 | 9.1(9.1) | 9.0 (0) | 0 (9.1) |
| Q328 | B-4 | 0 (0) | 0 (9.1) | 4.9 (0) |
| Q329 | D-3 | 1.9(1.9) | 0 (0) | 1.3(1.2) |

M2 LOGIC

V:playback
(V):recording

| Transistor location | | Voltage(unit:V) | | |
|---|---|---|---|---|
| | | E | C | B |
| Q606 | E-5 | | 10.0 | 4.7 |
| Q609 | F-2 | | 5.0 | 4.7 |
| Q611 | F-4 | | 4.5 | 0 (4.6) |
| Q612 | F-4 | | 4.5 | 0 (4.6) |
| Q613 | F-3 | | | |
| Q601 | D-4 | | | 9.6 |
| Q605 | D-4 | | | |
| Q604 | D-4 | | | 9.6 |
| Q606 | D-4 | | 9.6 | |

M2 LOGIC

| Diode location | |
|---|---|
| D601 | E-5 |
| D602 | E-4 |
| D605 | F-4 |
| D607 | E-4 |
| D611 | G-5 |
| D613 | D-3 |
| D801 | E-5 |

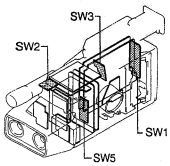
| IC location | |
|---|---|
| Q601 | F-1 |
| Q603 | E-3 |
| Q604 | E-4 |

VIDEO

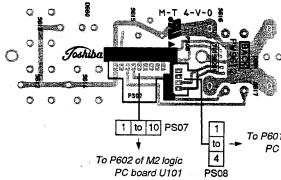
| IC location | |
|---|---|
| Q301 | B-1 |
| Q302 | B-2 |
| Q305 | D-2 |
| Q304 | C-3 |
| Q491 | C-2 |
| Q891 | C-4 |

| Diode location | |
|---|---|
| D302 | D-5 |
| D303 | D-2 |

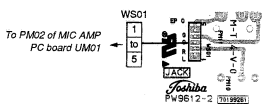
## 13. SW 1/2/3/5 PC BOARD



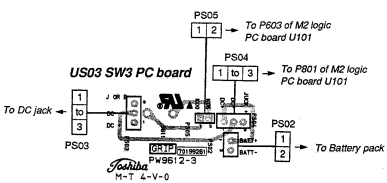

*US01 SW1 PC board*



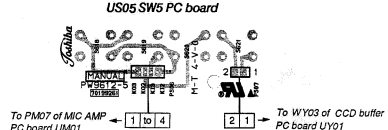

*US02 SW02 PC board*




*US03 SW3 PC board*




*US05 SW5 PC board*




Note:"PS07"may be printed on the PC board instead of "PS09".

① Q301.Pin ⑪ E-13

V:0.2V/div
H:5ms/div

②TP302 E-13

V:0.2V/div
H:5ms/div

③ Q301.Pin ㉔ F-12

V:0.5V/div
H:5ms/div

④ QB91.Pin ⑦ C-10

V:2V/div
H:5ms/div

⑤ QA91.Pin ③ C-8

V:50mV/div
H:10μs/div

⑥ QA91.Pin ㊵ G-7

V:0.05V/div
H:10μs/div

⑦ QA91.Pin ⑱ C-7

V:0.2V/div
H:10μs/div

⑧ QA91.Pin ㉘ C-7

V:0.2V/div
H:10μs/div

⑨ QA91.Pin ⑱ C-7

V:0.2V/div
H:10μs/div

⑩ QA91.Pin ⑭ C-6

V:0.2V/div
H:10μs/div

⑪ QB91.Pin ㉘ F-10

V:0.1V/div
H:10μs/div

⑫ QB91.Pin ① C-8

V:0.05V/div
H:10μs/div

⑬ QB91.Pin ② C-9

V:0.2V/div
H:10μs/div

⑭ Q303.Pin ⑮ B-6

V:0.2V/div
H:0.1μs/div

⑮ QB91.Pin ⑰ F-12

V:0.1V/div
H:0.1μs/div

⑯ QB91.Pin ⑮ C-12

V:0.1V/div
H:0.1μs/div

⑰ QA91.Pin ㊳ G-5

V:0.5V/div
H:10μs/div

⑱ P808.Pin ② B-14

V:0.2V/div
H:10μs/div

⑲ QA91.Pin ㊽ G-8

V:0.2V/div
H:10μs/div

⑳ QA91.Pin ㊳ G-5

(EE)

V:0.5V/div
H:10μs/div

㉑ P808.Pin ② B-14

V:0.2V/div
H:10μs/div

㉒EVF VIDEO OUT C-14

V:0.2V/div
H:10μs/div

㉓ QA91.Pin ㉘ G-7

V:0.2V/div
H:10μs/div

㉔ QA91.Pin ① C-5

V:0.2V/div
H:10μs/div

㉕ QA91.Pin ① C-3

V:1V/div
H:20μs/div

㉖ Q813.Emitter B-9

V:0.2V/div
H:0.1μs/div

㉗ W302.Pin ④ G-2

V:0.2V/div
H:10μs/div

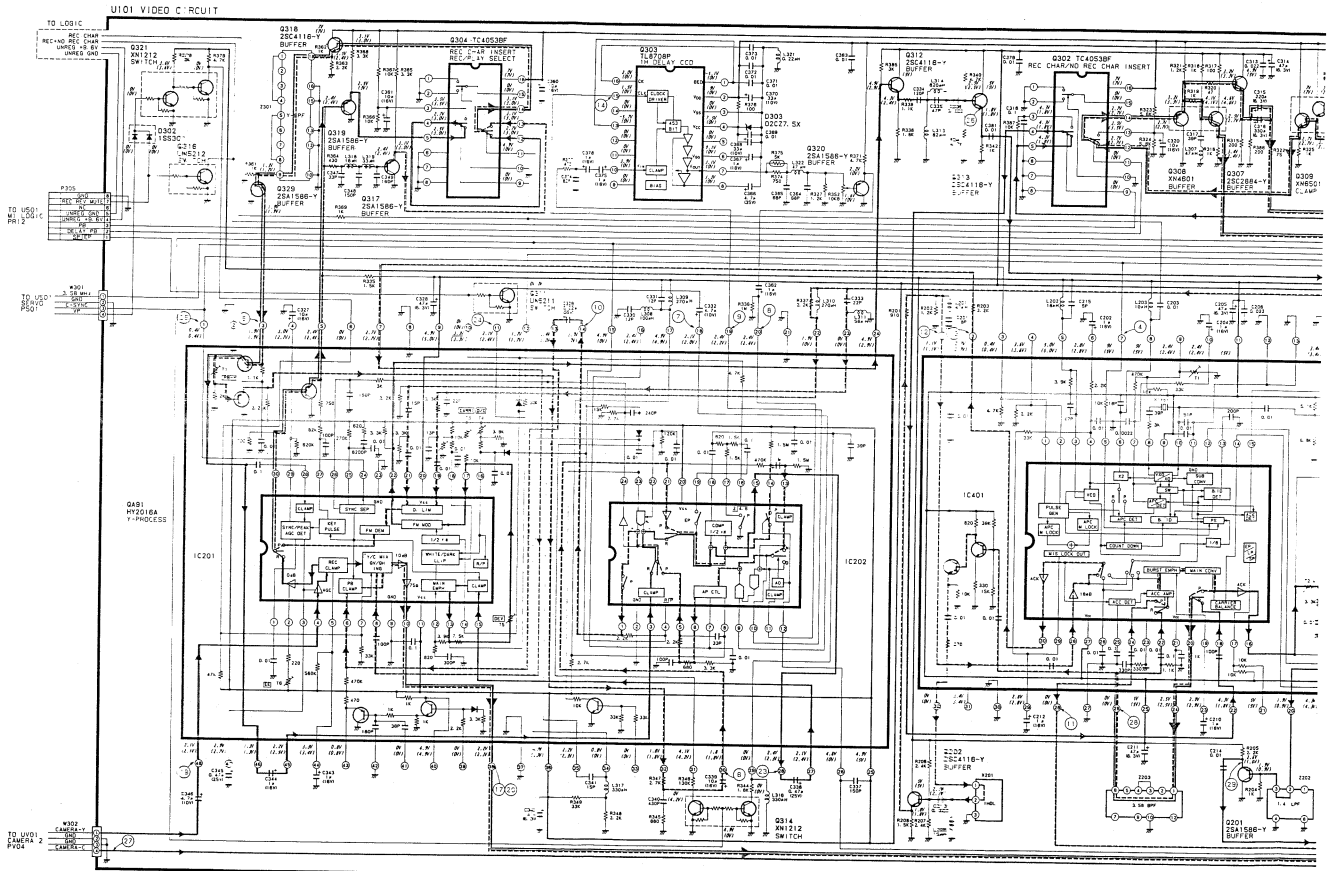
㉘ QB91.Pin ㉘ F-10

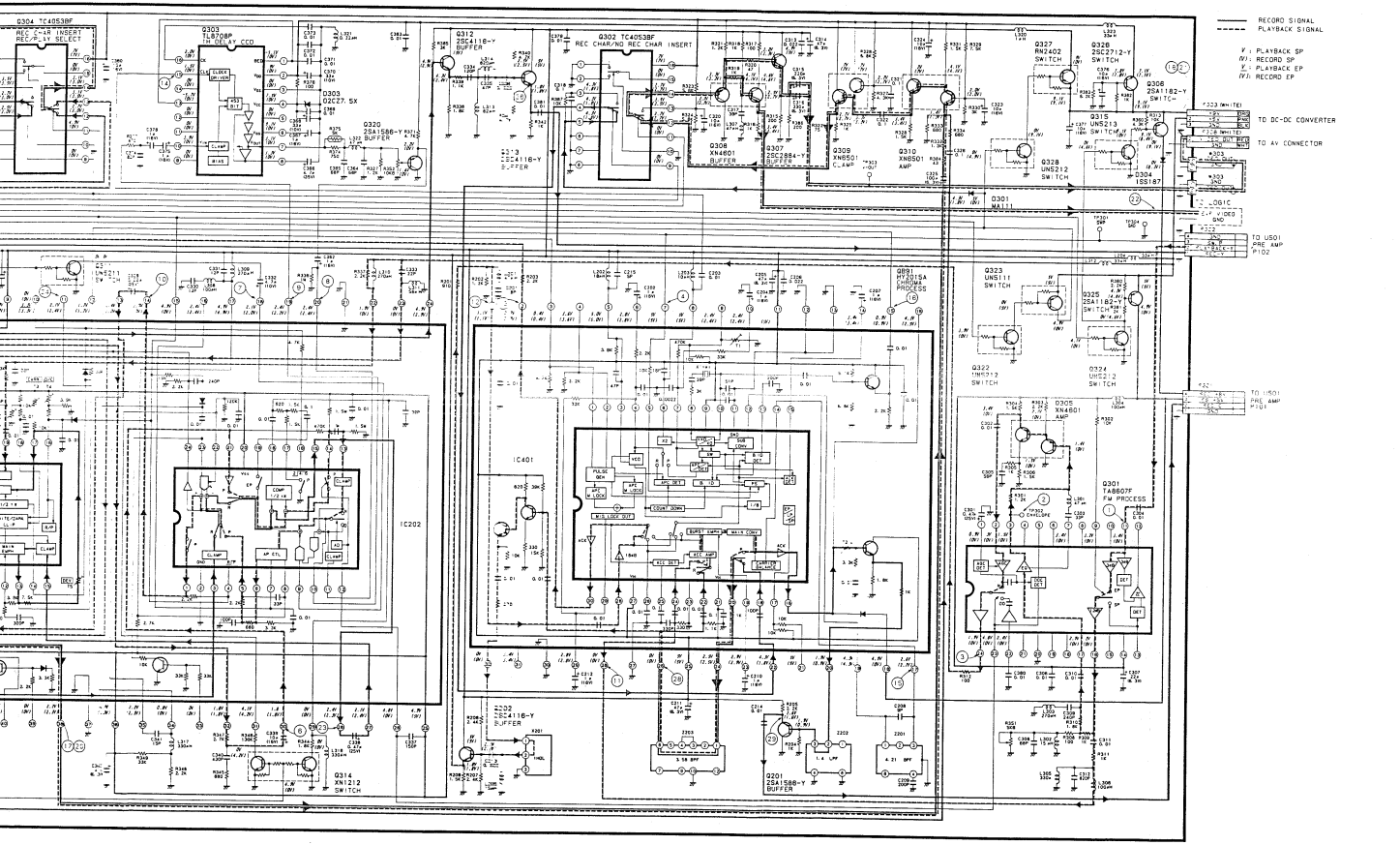
V:0.1V/div
H:10μs/div

㉙ Q201.Emitter G-11

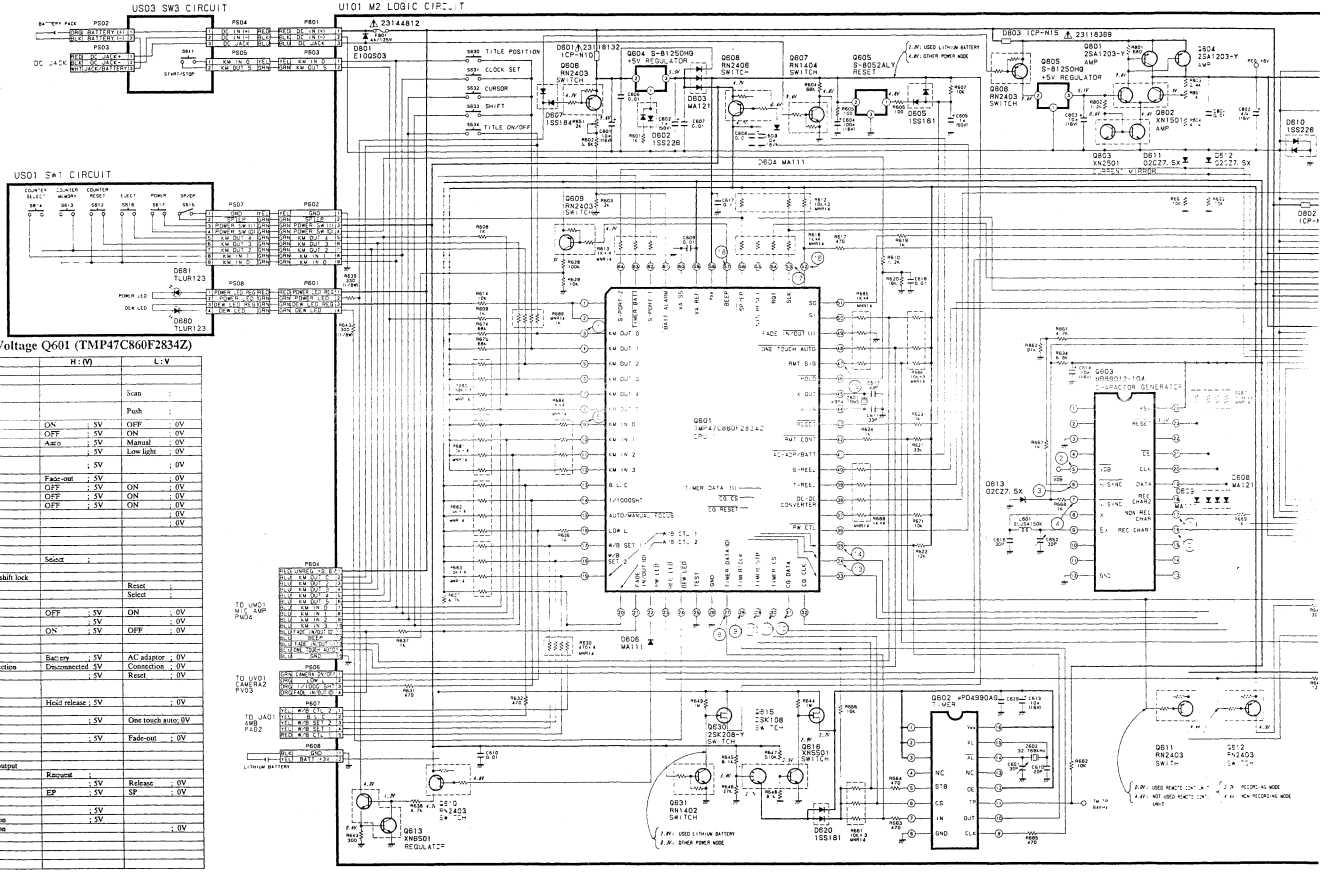
V:0.1V/div
H:10μs/div

## 9-3. VIDEO CIRCUIT



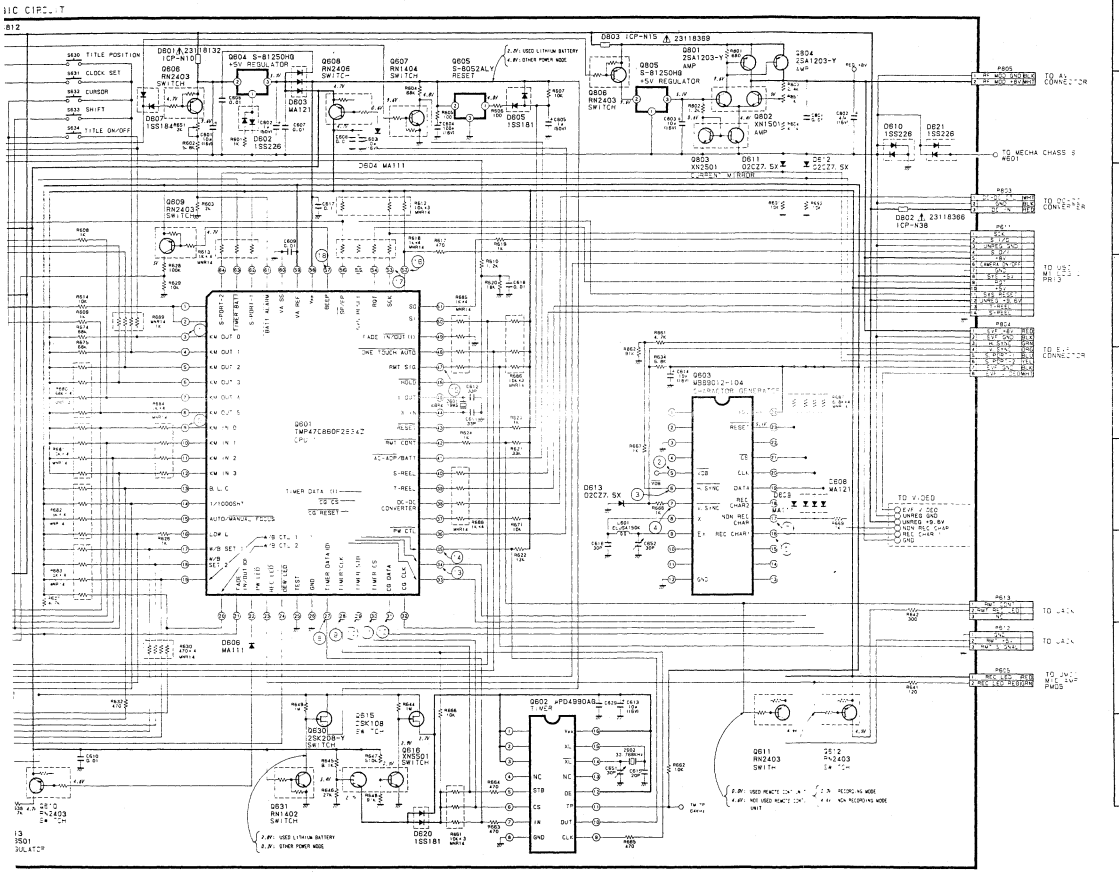

RECORD SIGNAL
PLAYBACK SIGNAL
V : PLAYBACK SP
(V) : RECORD SP
V : PLAYBACK EP
(V) : RECORD EP
TO DC-DC CONVERTER
TO AV CONNECTOR
TO U501 PRE AMP P102
TO U501 PRE AMP P101
Q304 TC4053BF
REC C-AR INSERT REC/PLAY SELECT
Q303 TL8709F TIMING CCD
Q303 D2C27, 5X
Q320 2SA1586-Y BUFFER
Q312 2SC4116-Y BUFFER
Q302 TC4053BF REC CHAR/NO REC CHAR INSERT
Q313 2SC4116-Y BUFFER
Q308 XN4601 BUFFER
Q307 2SC2884-Y BUFFER
Q309 XN6501 CLAMP
Q310 XN6501 AMP
Q327 RN2402 SWITCH
Q326 2SC2712-Y SWITCH
Q315 UNS213 SWITCH
Q328 UNS212 SWITCH
Q306 2SA1182-Y SWITCH
D304 1SS187
D301 MA111
Q323 UNS111 SWITCH
Q325 2SA1182-Y SWITCH
Q322 UNS212 SWITCH
Q324 UNS212 SWITCH
Q305 XN4601 AMP
Q301 TA8607F FM PROCESS
Q891 HY3015A CHROMA PROCESS
IC401
IC202
Q202 2SC4116-Y BUFFER
Q201 2SA1586-Y BUFFER
Q314 XN1212 SWITCH

## 7-3. M2 LOGIC CIRCUIT



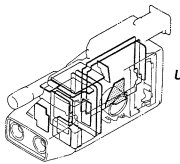

### Microcomputer Terminal Voltage Q601 (TMP47C860F2834Z)

| Pin | Item | H : (V) | L : V |
|---|---|---|---|
| 1 | | | |
| 2 | Not used | | |
| 3 to 8 | Key matrix output | | Scan ; |
| 9 to 12 | Key input | | Push ; |
| 13 | Backlight compensation | ON ; 5V | OFF ; 0V |
| 14 | 1/1000 sec. shutter | OFF ; 5V | ON ; 0V |
| 15 | Manual/auto focus select | Auto ; 5V | Manual ; 0V |
| 16 | Low light warning | ; 5V | Low light ; 0V |
| 17 to 20 | White balance setting | ; 5V | ; 0V |
| 21 | Fade-in/out | Fade-out ; 5V | ; 0V |
| 22 | Power LED ON/OFF | OFF ; 5V | ON ; 0V |
| 23 | Record LED ON/OFF | OFF ; 5V | ON ; 0V |
| 24 | Dew warning LED ON/OFF | OFF ; 5V | ON ; 0V |
| 25 | Test | | ; 0V |
| 26 | Ground | | ; 0V |
| 27 | Timer data/command | | |
| 28 | Timer data/command shift lock | | |
| 29 | Timer strobe | | |
| 30 | Timer chip select | Select ; | |
| 31 | Character generator data/command | | |
| 32 | Character generator data/command shift lock | | |
| 33 | Character generator reset pulse | | Reset ; |
| 34 | Character generator chip select | | Select ; |
| 35 | Timer data input | | |
| 36 | Switched 5V ON/OFF | OFF ; 5V | ON ; 0V |
| 37 | | ; 5V | ; 0V |
| 38 | DC-DC converter ON/OFF | ON ; 5V | OFF ; 0V |
| 39 | Take-up reel FG | | |
| 40 | Supply reel FG | | |
| 41 | AC adaptor/battery condition | Battery ; 5V | AC adaptor ; 0V |
| 42 | Remote control connection/disconnection | Disconnected ; 5V | Connection ; 0V |
| 43 | Reset | ; 5V | Reset ; 0V |
| 44 and 45 | Oscillator connection terminal | | |
| 46 | Hold | Hold release ; 5V | ; 0V |
| 47 | Remote control signal input | | |
| 48 | One touch auto switch input | ; 5V | One touch auto; 0V |
| 49 | Not used | | |
| 50 | Fade-in/out switch | ; 5V | Fade-out ; 0V |
| 51 | Serial data input | | |
| 52 | Serial data output | | |
| 53 | Serial data transfer shift lock input/output | | |
| 54 | Serial data transfer start request | Request ; | |
| 55 | CPU2 reset release | ; 5V | Release ; 0V |
| 56 | SP/EP select | EP ; 5V | SP ; 0V |
| 57 | Buzzer drive pulse output | | |
| 58 | Power +5V | ; 5V | |
| 59 | Reference voltage for A/D conversion | ; 5V | |
| 60 | Reference ground for A/D conversion | | ; 0V |
| 61 | Battery alarm | | |
| 62 | Test mode | | |
| 63 | Timer battery voltage test input | | |
| 64 | Test mode | | |

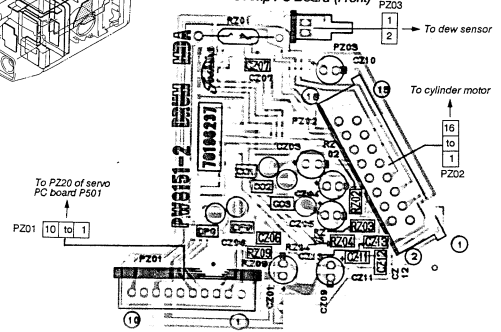


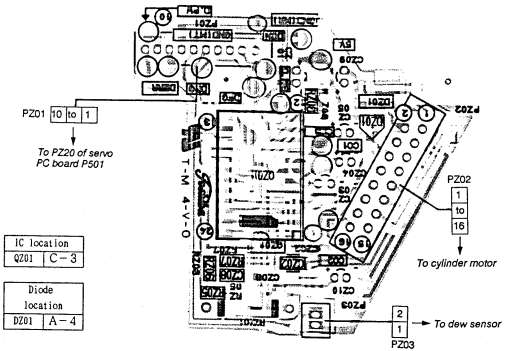
| | |
|---|---|
| ① Q601.Pin ③ C-6 V:1V/div H:1ms/div | ② Q603.Pin ⑤ D-10 V:1V/div H:20μs/div |
| ③ Q603.Pin ⑥ E-10 V:1V/div H:50μs/div | ④ Q603.Pin ⑦ E-10 V:1V/div H:5ms/div |
| ⑤ Q601.Pin ⑨ D-6 V:1V/div H:1ms/div | ⑥ Q603.Pin ⑮ E-11 V:1V/div H:20μs/div |
| ⑦ Q603.Pin ⑰ E-11 V:1V/div H:20μs/div | ⑧ Q601.Pin ㉗ F-7 V:1V/div H:1ms/div |
| ⑨ Q601.Pin ㉘ F-7 V:1V/div H:200μs/div | ⑩ Q601.Pin ㉙ F-8 V:1V/div H:200μs/div |
| ⑪ Q601.Pin ㉚ F-8 V:1V/div H:1ms/div | ⑫ Q601.Pin ㉛ F-8 V:1V/div H:200μs/div |
| ⑬ Q601.Pin ㉜ E-8 V:1V/div H:500μs/div | ⑭ Q601.Pin ㉝ E-8 V:1V/div H:500μs/div |
| ⑮ Q601.Pin ㊶ D-8 V:1V/div H:20ms/div | ⑯ Q601.Pin ㊷ C-8 V:1V/div H:1ms/div |
| ⑰ Q601.Pin ㊸ C-8 V:1V/div H:1ms/div | ⑱ Q601.Pin ㊹ C-7 V:1V/div H:2ms/div |

## 8-3. MOTOR DRIVE AMP (MDA) PC BOARD



UZ01 Motor Drive Amp PC Board (Front)



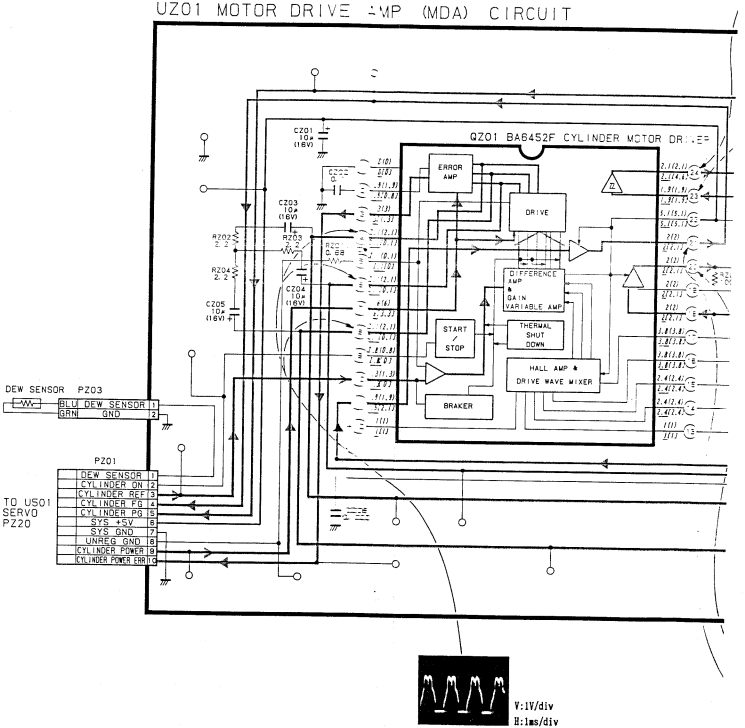




UZ01 Motor Drive Amp PC Board (Rear)



## 8-4. MOTOR DRIVE AMP (MDA) CIRCUIT

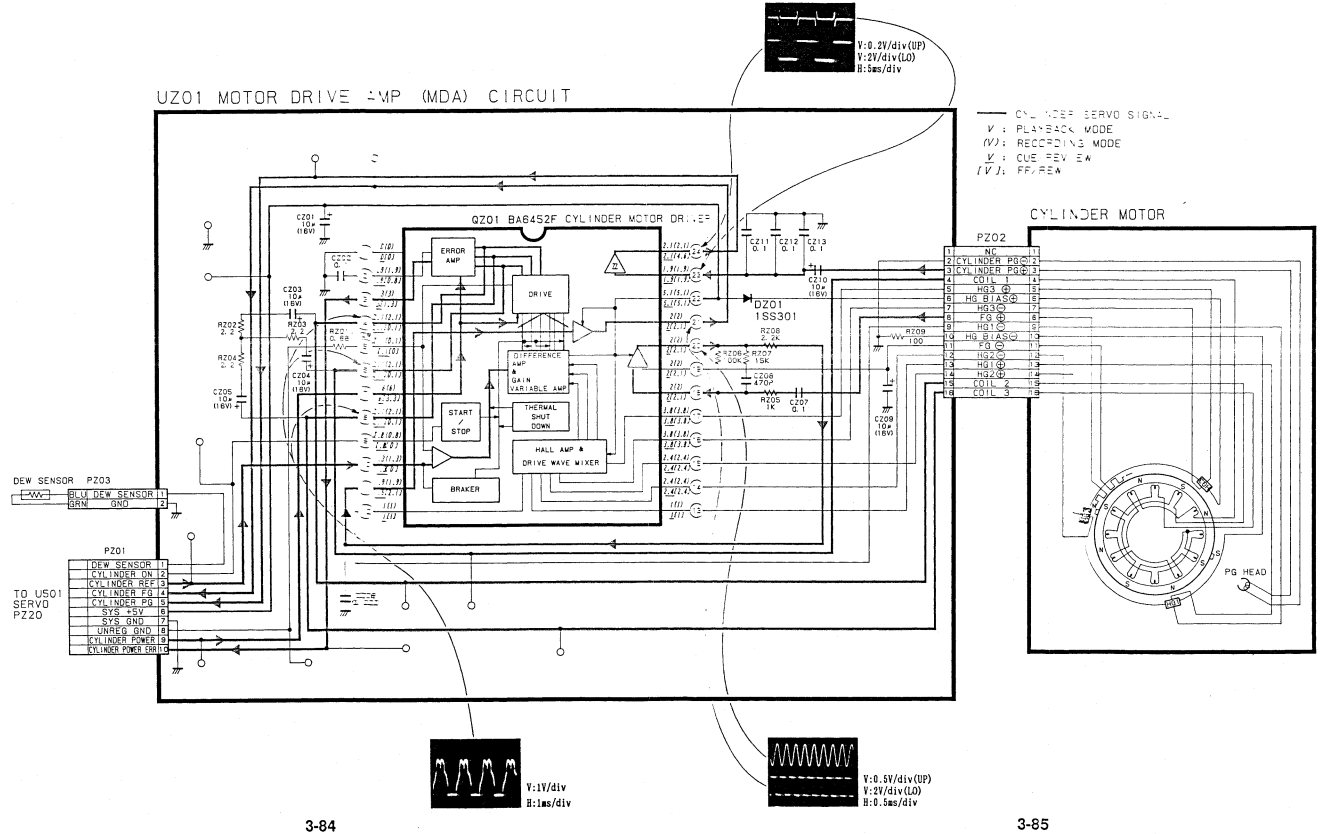
UZ01 MOTOR DRIVE AMP (MDA) CIRCUIT





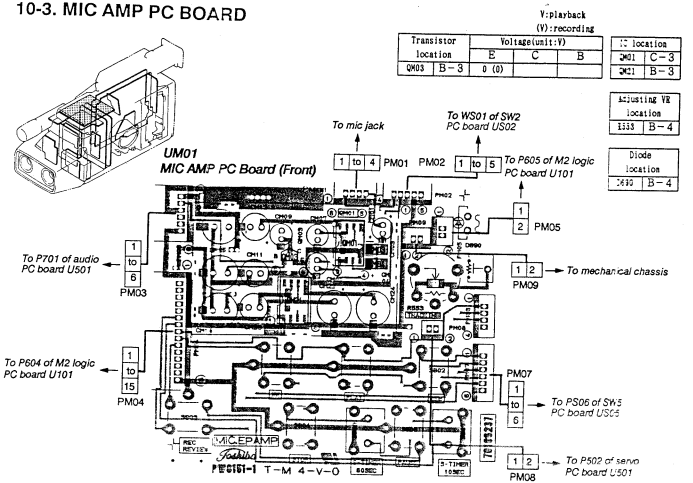

V:1V/div
H:1ms/div

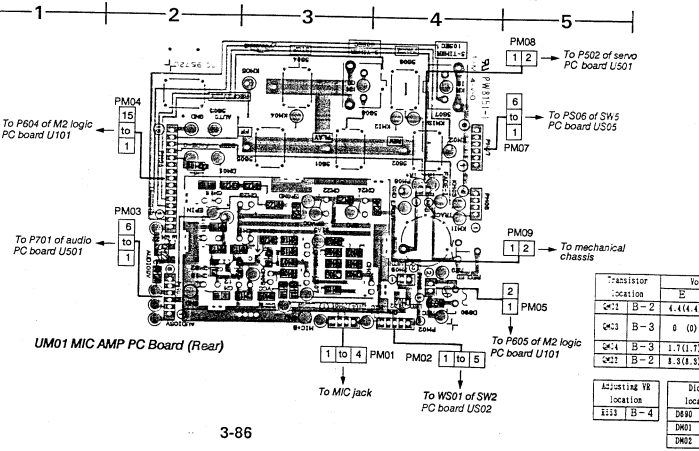
## 8-4. MOTOR DRIVE AMP (MDA) CIRCUIT



## 10-3. MIC AMP PC BOARD

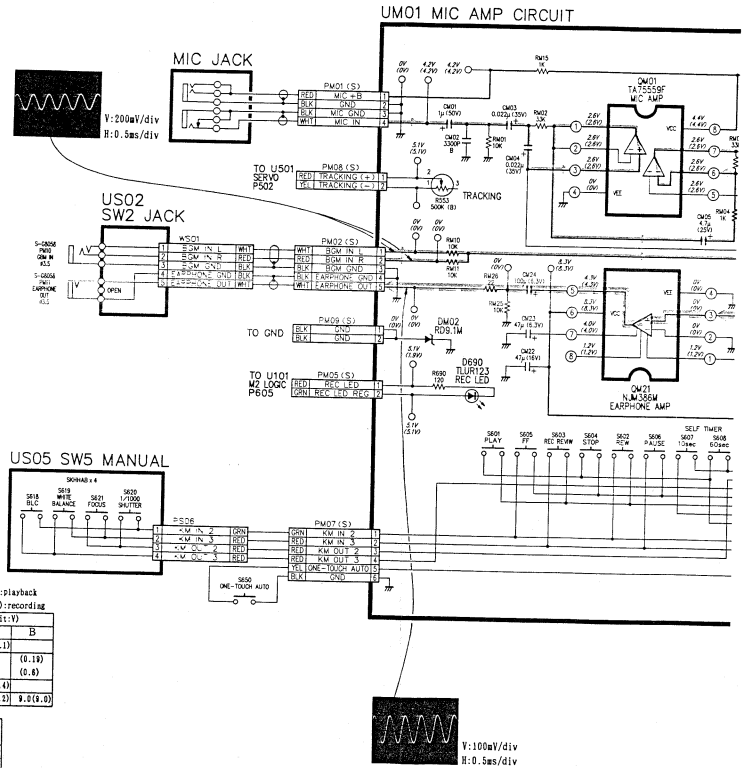




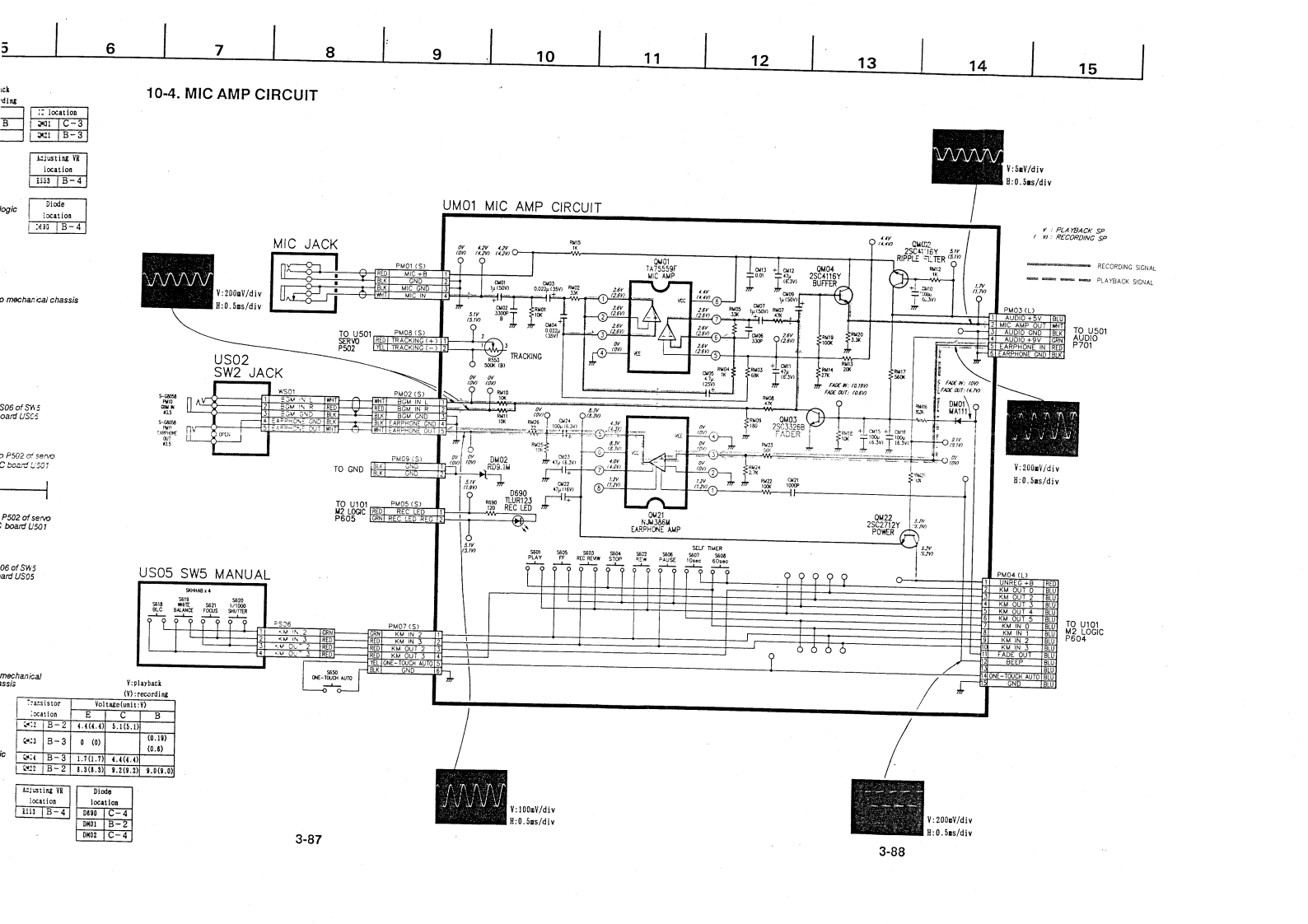






## 10-4. MIC AMP CIRCUIT



## 10-4. MIC AMP CIRCUIT




| IC location | |
|---|---|
| QM01 | C-3 |
| QM21 | B-3 |

| Adjusting VR location | |
|---|---|
| RV53 | B-4 |

| Diode location | |
|---|---|
| D690 | B-4 |

| Transistor location | Voltage(unit:V) | | |
|---|---|---|---|
| | E | C | B |
| QM12 B-2 | 4.4(4.4) | 5.1(5.1) | |
| QM23 B-3 | 0 (0) | | (0.19) (0.6) |
| QM24 B-3 | 1.7(1.7) | 4.4(4.4) | |
| QM22 B-2 | 8.3(8.3) | 9.2(9.2) | 9.0(9.0) |

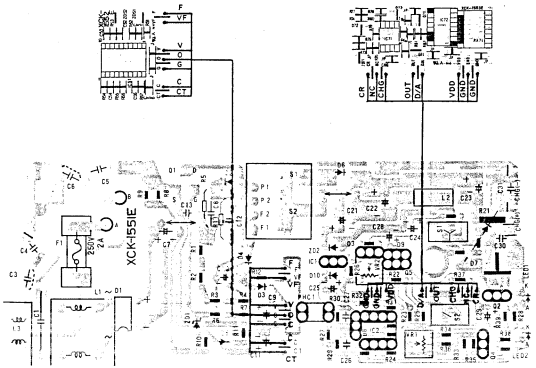
| Adjusting VR location | |
|---|---|
| RV53 | B-4 |

| Diode location | |
|---|---|
| D690 | C-4 |
| DM01 | B-2 |
| DM02 | C-4 |

## 14-1. AC ADAPTER PC BOARD

*U102*
*PWM Control PC Board (XCK-1552E)*

*U103*
*DC Control PC Board (XCK-1553E)*




*U101 AC Adapter PC Board (XCK-1551E)*

V:ADAPTER MODE(100V AC INPUT.NO LOAD)
( )V:CHARGE MODE(100V AC INPUT.NO LOAD)

| Transistor location | | Voltage(unit:V) E | C | B |
|---|---|---|---|---|
| Q2 | D-5 | | 0(15.8) | 6mV(0) |
| Q3 | C-4 | 0.248 (85mV) | | 10.85 (0) |
| Q4 | D-5 | | 2.005 (4mV) | 0 (15.6) |
| Q5 | C-4 | 5.09(5.06) | | |
| Q71 | B-4 | 0 (0) | 5.087 (12.7mV) | 1mV (10.5) |

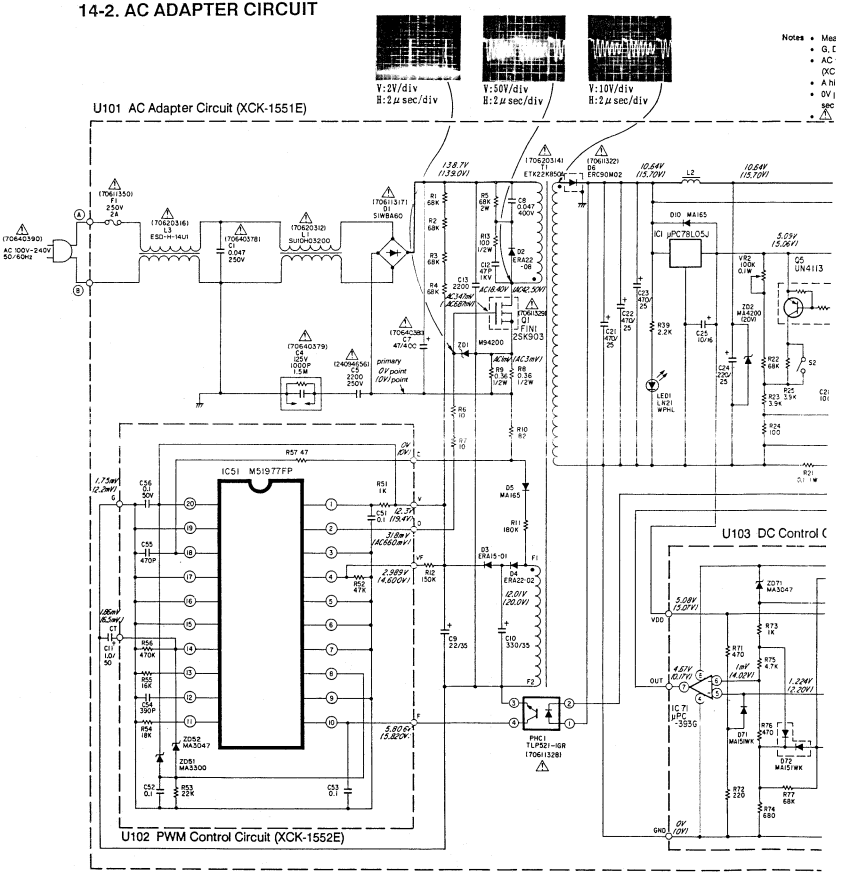
| Transistor arrangement | | Voltage(unit:V) S | D | G |
|---|---|---|---|---|
| Q1 | C-2 | AC 1mV (3mV) | AC 18.4 42.5 | AC 347mV (58mV) |

| Varioha location | |
|---|---|
| VR1 | D-4 |
| VR2 | C-4 |

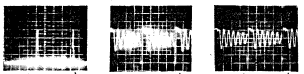
| Diode | |
|---|---|
| D1 | D-2 |
| D2 | C-3 |
| D3 | D-3 |
| D4 | C-3 |
| D5 | D-3 |
| D6 | C-4 |
| D7 | C-5 |
| D8 | D-4 |
| D9 | C-4 |
| D10 | C-3 |
| DT1 | B-4 |
| DT2 | B-4 |
| DT3 | A-4 |
| ZD1 | D-2 |
| ZD2 | C-3 |
| ZD51 | B-2 |
| ZD52 | B-2 |
| ZD71 | B-4 |

| IC location | |
|---|---|
| IC1 | C-3 |
| IC2 | D-4 |
| IC51 | B-2 |
| IC71 | B-4 |
| IC72 | B-4 |

## 14-2. AC ADAPTER CIRCUIT



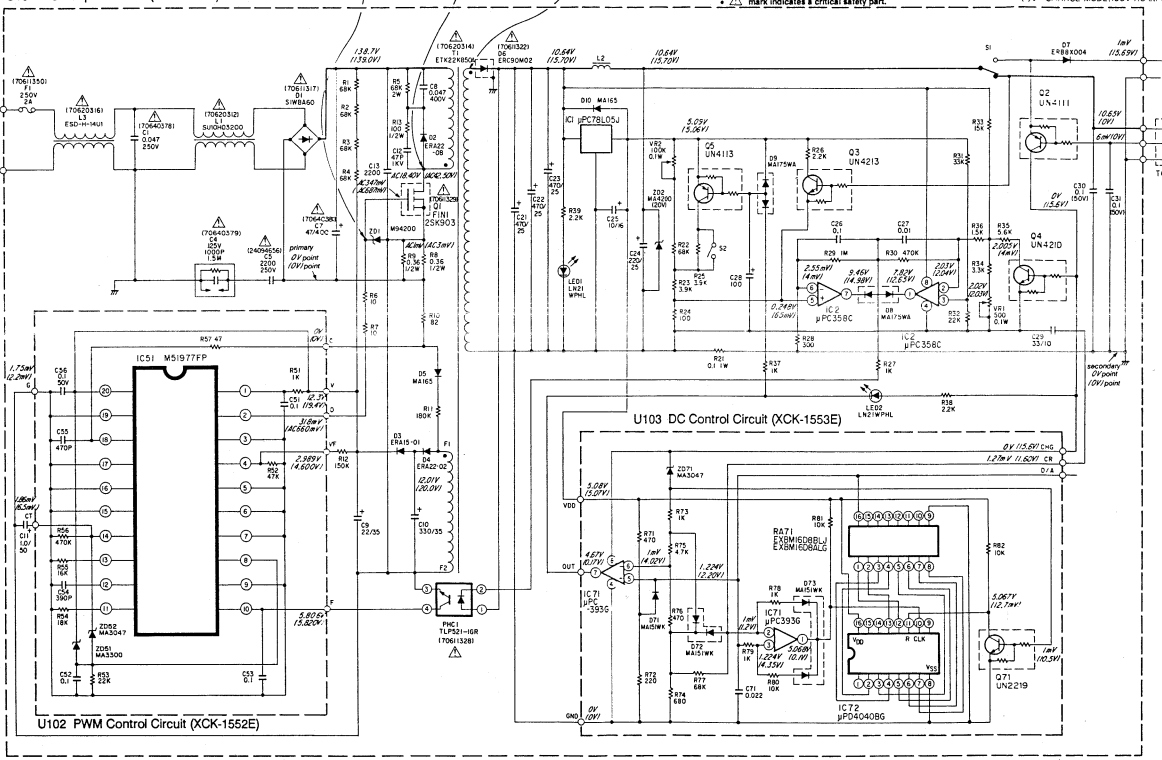
## 14-2. AC ADAPTER CIRCUIT




**Notes**
- Measurement is done using a digital voltmeter.
- G, D and S voltages at Q1 are measured in AC voltage.
- AC voltages are also measured at terminals with "0" output on IC PC board (XCK-1552E).
- A high-frequency voltmeter is used for AC voltage measurement.
- 0V point in the primary circuit is a C7 minus terminal, and 0V point in the secondary circuit is an adapter/charge minus terminal.
- ⚠ mark indicates a critical safety part.

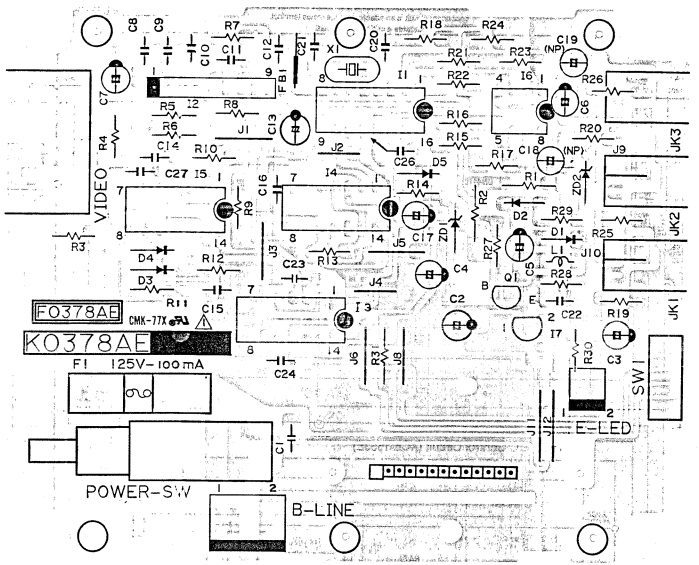
( ) ADAPTER MODE(100V AC INPUT,NO LOAD)
( ) CHARGE MODE(100V AC INPUT,NO LOAD)

U101 AC Adapter Circuit (XCK-1551E)



## 15-1. 3D ADAPTER PC BOARD

*U901 3D Adapter PC Board*




| IC location | |
|---|---|
| IC1 | B-4 |
| IC2 | B-3 |
| IC3 | D-4 |
| IC4 | C-4 |
| IC5 | C-3 |
| IC6 | B-5 |
| IC7 | D-5 |

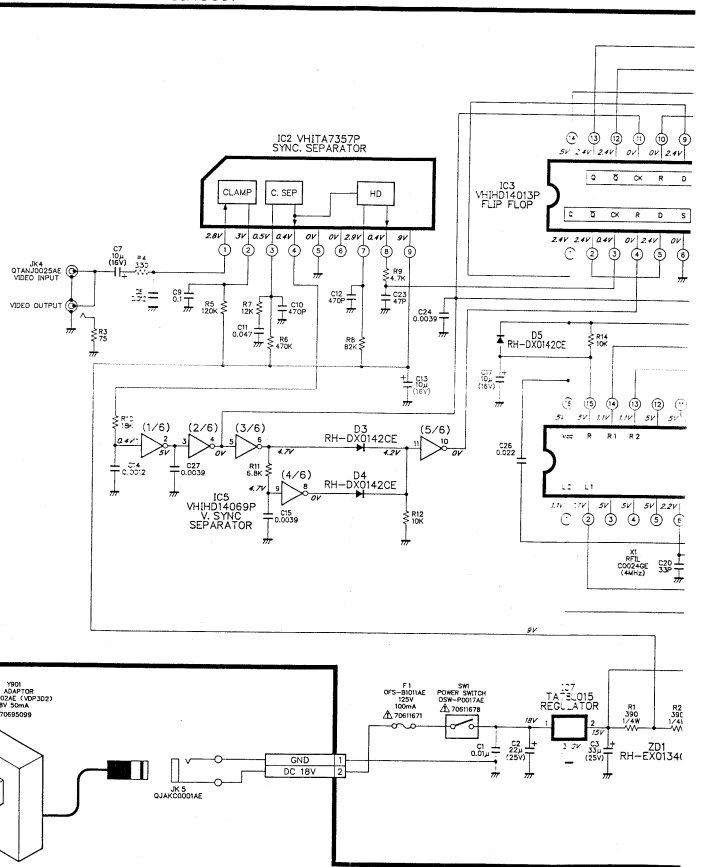
| Diode location | |
|---|---|
| D1 | C-5 |
| D2 | C-5 |
| D3 | D-2 |
| D4 | C-2 |
| D5 | C-4 |
| ZD1 | C-5 |
| ZD2 | C-6 |

| Transistor location | | Voltage(unit:V) | | |
|---|---|---|---|---|
| | | E | C | B |
| Q1 | D-5 | 2.6 | 13.5 | 1.8 |



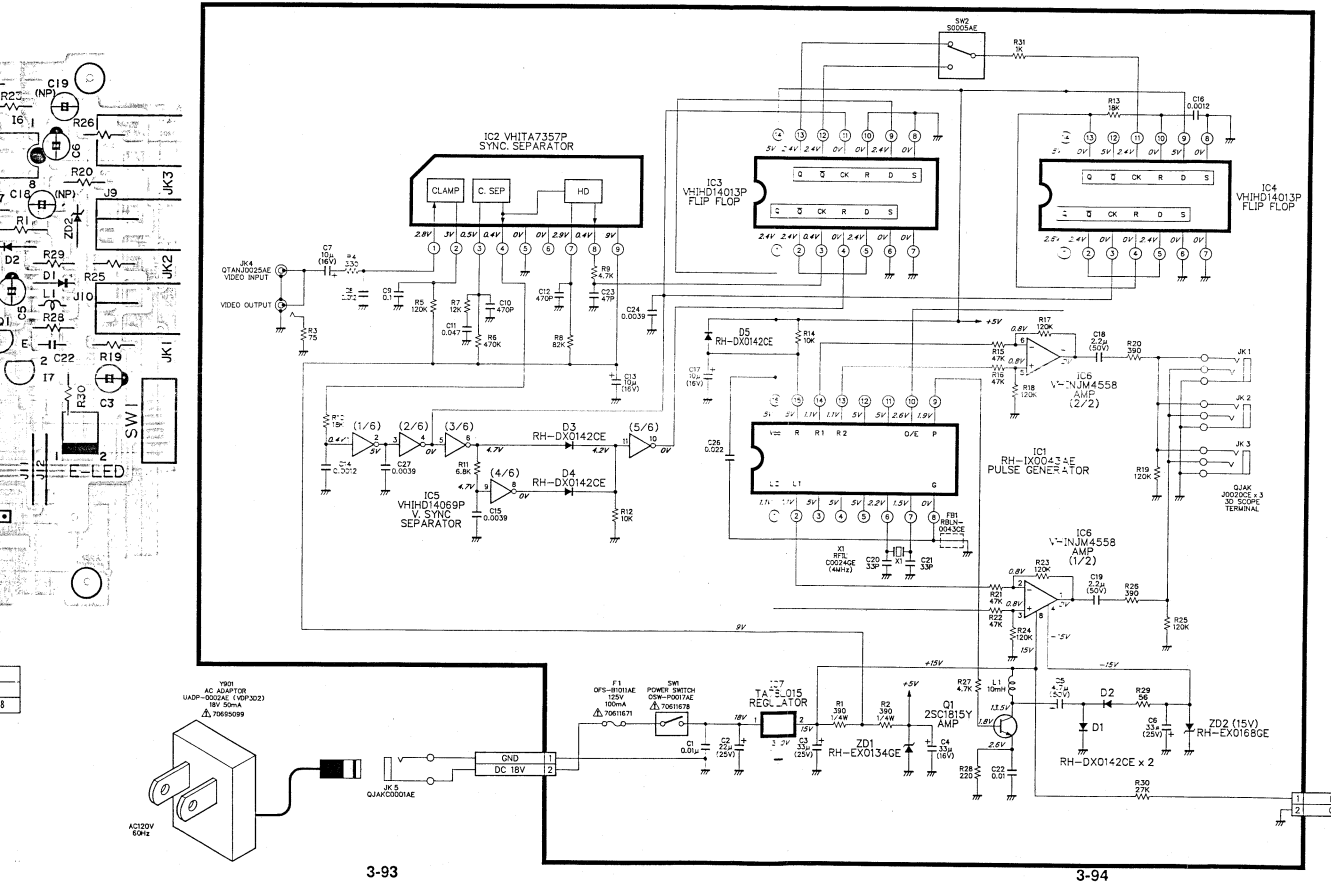
## 15-2. 3D ADAPTER CIRCUIT

U901 3D ADAPTOR CIRCUIT



## 15-2. 3D ADAPTER CIRCUIT

U901 3D ADAPTOR CIRCUIT



# SECTION 4
# PARTS LIST

## SAFETY PRECAUTION

The parts identified by ⚠ mark are critical for safety. Replace only with part number specified.
The mounting position of repiacement is to be identical with originals. The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

## NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

Parts marked # are of chip type and mounted on original PC boards.
However, when they are placed for servicing works, use discrete parts listed on the parts list.

## ABBREVIATIONS

### 1. Integrated circuit (IC)

### 2. Capacitor (Cap)

- **Unit**

| | | Ex. |
|---|---|---|
| F | farad | |
| MF | microfarad ($\mu F = 10^{-6}F$) | 10MF = 10μF |
| PF | picofarad ($pF = 10^{-6}\mu F = 10^{-12}F$) | 10PF = 10pF |

- **Capacitance tolerance (for nominal capacitance higher than 10pF)**

| Symbol | B | C | D | F | G | J | K | M | N |
|---|---|---|---|---|---|---|---|---|---|
| Tolerance % | ±0.1 | ±0.25 | ±0.5 | ±1 | ±2 | ±5 | ±10 | ±20 | ±30 |

| Symbol | P | Q | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|
| Tolerance % | +100<br>0 | +30<br>–10 | +50<br>–10 | +75<br>–10 | +20<br>–10 | +100<br>–10 | +40<br>–20 | +150<br>–10 | +80<br>–20 |

Ex. 10MF J = 10μF ±5%

- **Capacitance tolerance (for nominal capacitance lower than 10pF)**

| Symbol | B | C | D | F | G |
|---|---|---|---|---|---|
| Tolerance pF | ±0.1 | ±0.25 | ±0.5 | ±1 | ±2 |

Ex. 10PF G = 10pF ±2pF

### 3. Resistor (Res)

- **Unit**

| | | Ex. | |
|---|---|---|---|
| No Mark | Ω | 10 | 10 Ω |
| K | kΩ | 10K | 10k Ω |
| M | MΩ | 10M | 10M Ω |
| W | Watt | 1W | 1 Watt |

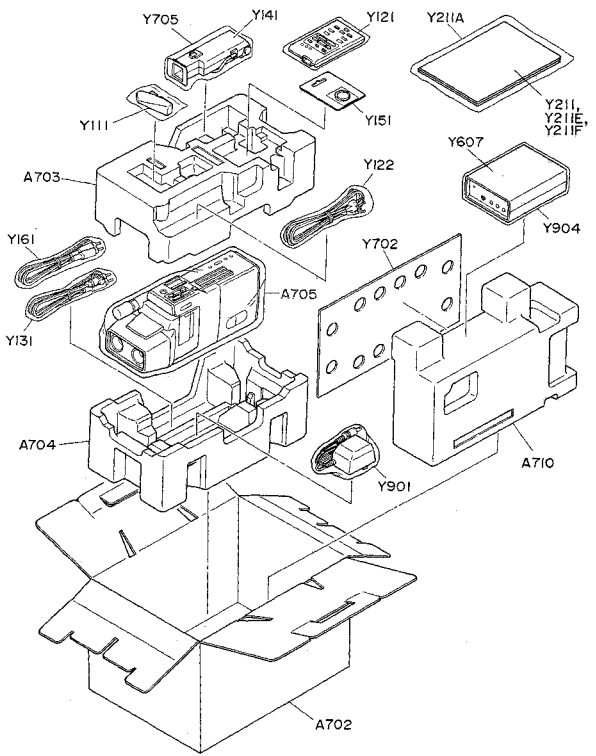
- **Resistance tolerance**

| Symbol | B | C | D | F | G | J | K | M |
|---|---|---|---|---|---|---|---|---|
| Tolerance % | ±0.1 | ±0.25 | ±0.5 | ±1 | ±2 | ±5 | ±10 | ±20 |

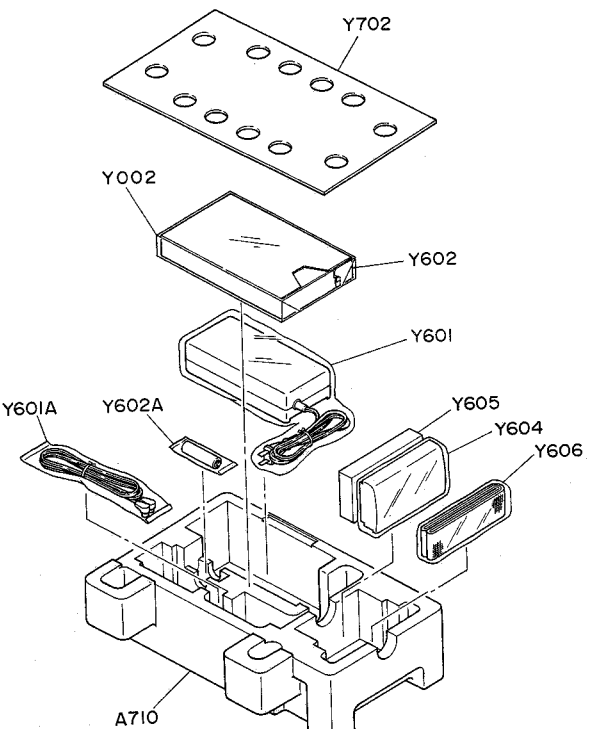
Ex. 470 J = 470 Ω ±5%

## 1. EXPLODED VIEWS

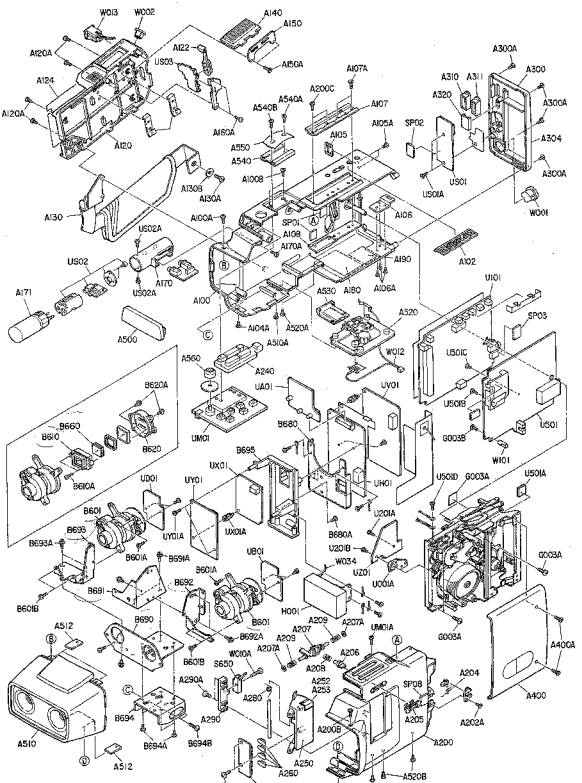
(1) Packing Assembly



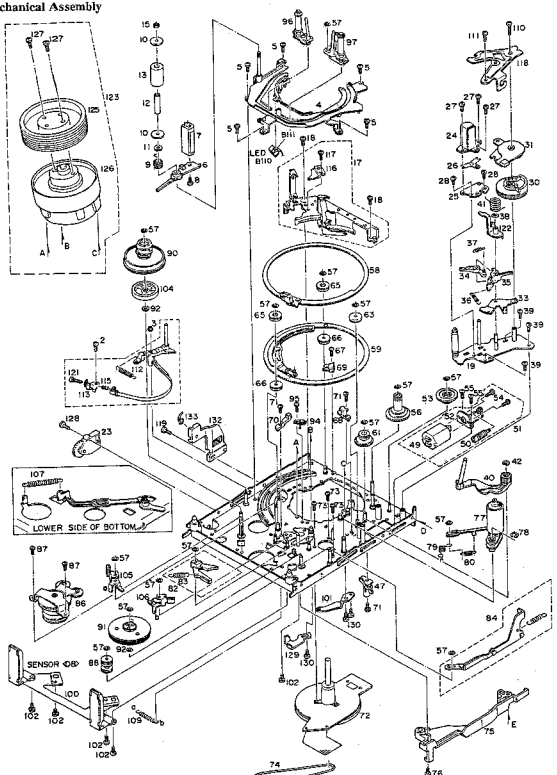
(2) Accessories Packing Assembly



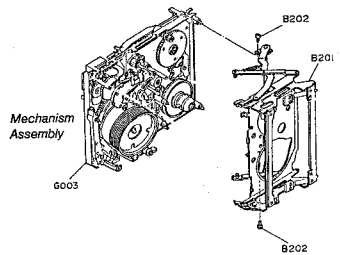
(3) Cabinet Assembly



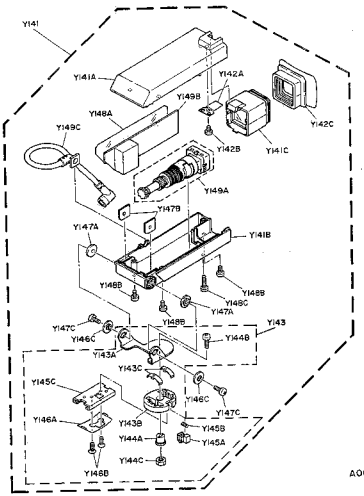
(4) Mechanical Assembly



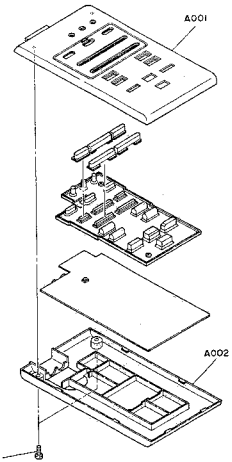
(5) Final Assembly



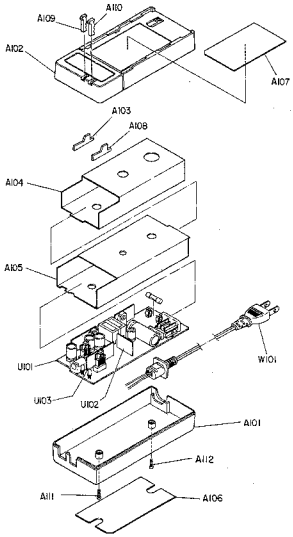

(6) Electronic Viewfinder Assembly



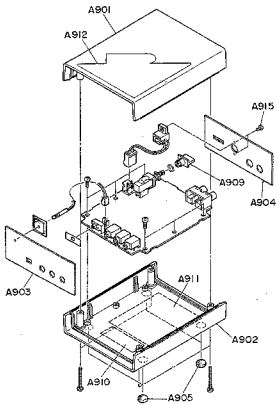

(7) Remote Control Assembly



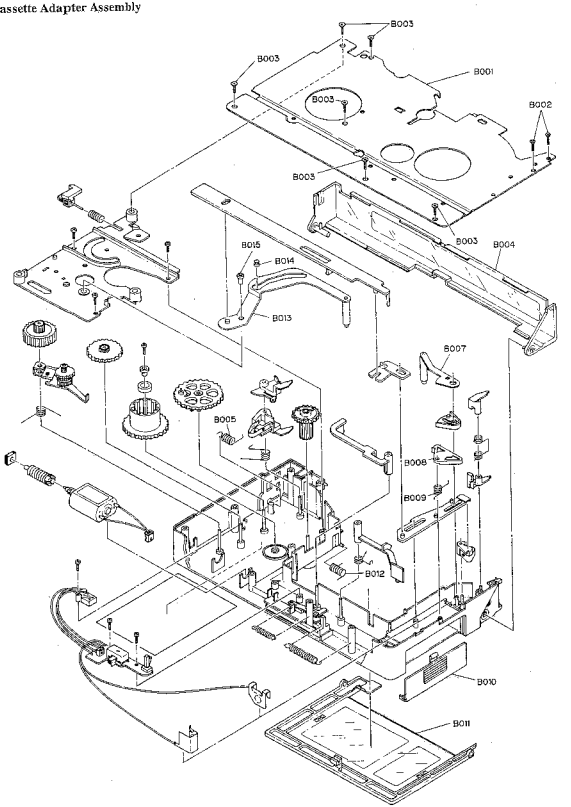
**(8) AC Adapter Assembly**




**(9) 3D Adapter Assembly**



(10) Cassette Adapter Assembly



## 2. Parts List

| LOCATION NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| | | ELECTRICAL PARTS |
| ■ U101 | 70197937 | P C Board Assy,MOTHER 2 |
| | | - INTEGRATED CIRCUITS - |
| Q301 | B0379076 | IC TA8607F |
| Q302 | B0470535 | IC TC4053BF-T1 |
| Q303 | B0585560 | IC TL870SP |
| Q304 | B0470535 | IC TC4053BF-T1 |
| Q601 | B0514718 | IC TMP47C660F |
| Q602 | 70119882 | IC UPD4990AG |
| Q603 | 70119883 | IC MB88012-104 |
| Q604 | 70119675 | IC S-8125NG |
| Q605 | 70119676 | IC S-8052ALY |
| Q805 | 70119675 | IC S-8125NG |
| | | - TRANSISTORS - |
| Q201 | A6549571 | Transistor,Chip 2SA1586-Y |
| Q202 | A6365621 | Transistor,Chip 2SC4115-Y |
| Q305 | 23314315 | Transistor,Chip XN4601 |
| Q306 | A6542161 | Transistor,Chip 2SA1162-Y |
| Q307 | A6342523 | Transistor,Chip 2SC2684-Y |
| Q308 | 23314315 | Transistor,Chip XN4601 |
| Q309 | 23314317 | Transistor,Chip XN6501 |
| Q310 | 23314317 | Transistor,Chip XN6501 |
| Q311 | 23314323 | Transistor,Chip UN5211 |
| Q312 | A6365621 | Transistor,Chip 2SC4115-Y |
| Q313 | A6365521 | Transistor,Chip 2SC4116-Y |
| Q314 | 23314319 | Transistor,Chip XN1212 |
| Q315 | 23314271 | Transistor,Chip UN5213 |
| Q316 | 23314270 | Transistor,Chip UN5212 |
| Q317 | A6549571 | Transistor,Chip 2SA1586-Y |
| Q318 | A6365521 | Transistor,Chip 2SC4116-Y |
| Q319 | A6549571 | Transistor,Chip 2SA1586-Y |
| Q320 | A6549571 | Transistor,Chip 2SA1586-Y |
| Q321 | 23314319 | Transistor,Chip XN1212 |
| Q322 | 23314270 | Transistor,Chip UN5212 |
| Q323 | 23314322 | Transistor,Chip UN5111 |
| Q324 | 23314270 | Transistor,Chip UN5212 |
| Q325 | A6542161 | Transistor,Chip 2SA1162-Y |
| Q326 | A6335471 | Transistor,Chip 2SC2712-Y |
| Q327 | A6014022 | Transistor,Chip RN2402 |
| Q328 | 23314270 | Transistor,Chip UN5212 |
| Q329 | A6549571 | Transistor,Chip 2SA1586-Y |
| Q606 | A6014032 | Transistor,Chip RN2403 |
| Q607 | A6014042 | Transistor,Chip RN1404 |
| Q608 | A6514062 | Transistor,Chip RN2406 |
| Q609 | A6014032 | Transistor,Chip RN2402 |
| Q610 | A6014032 | Transistor,Chip RN2403 |
| Q611 | A6014032 | Transistor,Chip RN2403 |
| Q612 | A6014032 | Transistor,Chip RN2403 |
| Q613 | 23314317 | Transistor,Chip XN6501 |
| Q615 | A6043541 | Transistor,FET 2SK209GR |
| Q616 | 23314316 | Transistor,Chip XN6501 |
| Q620 | A6043241 | Tr,Chip,FET 2SK108 |
| Q631 | A6004022 | Transistor,Chip RN1402 |
| Q801 | A6542375 | Transistor,Chip 2SA1213-Y |
| Q802 | 23314320 | Transistor,Chip XN1501 |
| Q803 | 23314321 | Transistor,Chip XN2501 |
| Q804 | A6543373 | Transistor,Chip 2SA1203-Y |
| Q806 | A6014032 | Transistor,Chip RN2403 |
| | | - DIODES - |
| D301 | 23118041 | Diode,Chip MA111 |
| D302 | A7154051 | Diode,Chip 1SS301 |
| D303 | A7238572 | Diode,Zener 02CZ7.5X |
| D304 | A7150802 | Diode,Chip 1SS187 |
| D601 | 23118122 | IC Protector ICP-N10 |
| D602 | A7152756 | Diode,Chip 1SS226 |
| D603 | 23118042 | Diode,Chip MA121 |
| D604 | 23118041 | Diode,Chip MA111 |
| D605 | A7150502 | Diode,Chip 1SS181 |
| D606 | 23118041 | Diode,Chip MA111 |
| D607 | A7150551 | Diode,Chip 1SS184 |
| D608 | 23118042 | Diode,Chip MA121 |
| D609 | 23118041 | Diode,Chip MA111 |
| D610 | A7152755 | Diode,Chip 1SS226 |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|
| D611 | A7238572 | Diode,Zener | 02CZ7.5X | |
| D612 | A7238572 | Diode,Zener | 02CZ7.5X | |
| D613 | A7238572 | Diode,Zener | 02CZ7.5X | |
| D620 | A7150502 | Diode,Chip | 1SS181 | |
| D621 | A7152755 | Diode,Chip | 1SS226 | |
| D622 | A7116515 | Diode,Zener | GAAZ8.8Y | |
| D801 | 70115432 | Diode | E10QS03 | |
| | | - COILS - | | |
| L201 | 23245898 | Coil,Chip | TRF470QC | |
| L202 | 23245833 | Coil,Chip | TRF4180QB | |
| L203 | 23245804 | Coil,Chip | TRF4100C | |
| L204 | 23245916 | Coil,Chip | TRF4330C | |
| L205 | 23245310 | Coil,Chip | TRF4150C | |
| L301 | 23245809 | Coil,Chip | TRF4470C | |
| L302 | 23245803 | Coil,Chip | TRF4150C | |
| L303 | 23245708 | Coil,Chip | TRF4271CS | |
| L304 | 23245918 | Coil,Chip | TRF4101C | |
| L305 | 23245915 | Coil,Chip | TRF4331C | |
| L306 | 23245703 | Coil,Chip | TRF4101CS | |
| L307 | 23245809 | Coil,Chip | TRF470C | |
| L308 | 23245703 | Coil,Chip | TRF4101CS | |
| L309 | 23245708 | Coil,Chip | TRF4271CS | |
| L310 | 23245706 | Coil,Chip | TRF4271CS | |
| L311 | 23245810 | Coil,Chip | TRF4560C | |
| L312 | 23245916 | Coil,Chip | TRF4330C | |
| L313 | 23245702 | Coil,Chip | TRF4820CS | |
| L314 | 23245906 | Coil,Chip | TRF4821CA | |
| L315 | 23245915 | Coil,Chip | TRF4331C | |
| L317 | 23245915 | Coil,Chip | TRF4331C | |
| L318 | 23245211 | Coil,Chip | TRF4180C | |
| L319 | 23245302 | Coil,Chip | TRF4330C | |
| L320 | 23245106 | Coil,Chip | TRF4180C | |
| L321 | 23103865 | Coil,Choke,Chip | T2M21047 | |
| L322 | 23245809 | Coil,Chip | TRF4470C | |
| L323 | 23245916 | Coil,Chip | TRF4330C | |
| L601 | 23245310 | Coil,Chip | TRF4150C | |
| | | - CAPACITORS - | | |
| C201 | 24108180 | Cap,Ceramic,Chip | 18PF | J 50V |
| C202 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C203 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C204 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C205 | 24291475 | Cap,Tantalum,Chip | 47MF | M 6.3V |
| C207 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C208 | 24108090 | Cap,Ceramic,Chip | 9PF | D 50V |
| C209 | 24108201 | Cap,Ceramic,Chip | 200PF | J 50V |
| C210 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C211 | 24291475 | Cap,Tantalum,Chip | 47MF | M 6.3V |
| C212 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C214 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C215 | 24105259 | Cap,Ceramic,Chip | 5PF | C 50V |
| C301 | 24235474 | Cap,Tantalum,Chip | 0.47MF | M 25V |
| C302 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C303 | 24108330 | Cap,Ceramic,Chip | 33PF | J 50V |
| C304 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C305 | 24105589 | Cap,Ceramic,Chip | 58PF | J 50V |
| C306 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C307 | 24618025 | Cap,EL,Chip | 220MF | M 6.3V |
| C308 | 24108680 | Cap,Ceramic,Chip | 68PF | J 50V |
| C309 | 24106241 | Cap,Ceramic,Chip | 240PF | J 50V |
| C310 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C311 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C312 | 24781821 | Cap,Chip | 820PF | J 50V |
| C314 | 24291476 | Cap,Tantalum,Chip | 47MF | M 6.3V |
| C315 | 24630825 | Cap,Electrolytic | 220MF | M 6.3V |
| C316 | 24630727 | Cap,Electrolytic | 330MF | M 6.3V |
| C317 | 24106390 | Cap,Ceramic,Chip | 39PF | J 50V |
| C318 | 24094760 | Cap,Chip | 0.1MF | Z 25V |
| C320 | 24293106 | Cap,Tantalum,Chip | 10MF | M 16V |
| C321 | 24094760 | Cap,Chip | 0.1MF | Z 25V |
| C322 | 24094744 | Cap,Chip | 0.1MF | M 25V |
| C323 | 24293106 | Cap,Tantalum,Chip | 10MF | M 16V |
| C324 | 24293106 | Cap,Tantalum,Chip | 10MF | M 16V |
| C325 | 24630864 | Cap,Electrolytic | 100MF | M 6.3V |
| C326 | 24094760 | Cap,Chip | 0.1MF | Z 25V |
| C327 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | | LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|---|---|---|---|---|
| C328 | 24830856 | Cap,Electrolytic | 47MF | M 6.3V | R208 | 24011152 | Res,Chip | 1.5K | J 1/20W |
| C329 | 24296224 | Cap,Tantalum,Chip | 0.22MF | M 35V | R301 | 24011122 | Res,Chip | 1.2K | J 1/20W |
| C330 | 24108120 | Cap,Ceramic,Chip | 12PF | J 50V | R302 | 24011103 | Res,Chip | 10K | J 1/20W |
| C331 | 24108120 | Cap,Ceramic,Chip | 12PF | J 50V | R303 | 24011222 | Res,Chip | 2.2K | J 1/20W |
| C332 | 24282475 | Cap,Tantalum,Chip | 4.7MF | M 10V | R304 | 24011152 | Res,Chip | 1.5K | J 1/20W |
| C333 | 24108220 | Cap,Ceramic,Chip | 22PF | J 50V | R305 | 24011182 | Res,Chip | 1K | J 1/20W |
| C334 | 24108121 | Cap,Ceramic,Chip | 120PF | J 50V | R306 | 24011152 | Res,Chip | 1.5K | J 1/20W |
| C335 | 24108470 | Cap,Ceramic,Chip | 47PF | J 50V | R308 | 24011101 | Res,Chip | 100 | J 1/20W |
| C337 | 24108151 | Cap,Ceramic,Chip | 150PF | J 50V | R309 | 24011102 | Res,Chip | 1K | J 1/20W |
| C338 | 24295474 | Cap,Tantalum,Chip | 0.47MF | M 25V | R310 | 24011182 | Res,Chip | 1.8K | J 1/20W |
| C339 | 24293106 | Cap,Tantalum,Chip | 10MF | M 16V | R311 | 24011102 | Res,Chip | 1K | J 1/20W |
| C340 | 24781431 | Cap,Chip | 430PF | J 50V | R312 | 24011101 | Res,Chip | 100 | J 1/20W |
| C341 | 24108150 | Cap,Ceramic,Chip | 15PF | J 50V | R313 | 24011103 | Res,Chip | 10K | J 1/20W |
| C342 | 24291476 | Cap,Tantalum,Chip | 47MF | M 6.3V | R316 | 24011102 | Res,Chip | 1K | J 1/20W |
| C343 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V | R317 | 24011101 | Res,Chip | 100 | J 1/20W |
| C344 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V | R318 | 24011102 | Res,Chip | 1K | J 1/20W |
| C345 | 24295474 | Cap,Tantalum,Chip | 0.47MF | M 25V | R319 | 24011102 | Res,Chip | 1K | J 1/20W |
| C346 | 24292475 | Cap,Tantalum,Chip | 4.7MF | M 10V | R321 | 24011122 | Res,Chip | 1.2K | J 1/20W |
| C347 | 24108330 | Cap,Ceramic,Chip | 33PF | J 50V | R322 | 24872750 | Res,Chip | 75 | J 1/16W |
| C348 | 24108151 | Cap,Ceramic,Chip | 150PF | J 50V | R323 | 24011562 | Res,Chip | 5.6K | J 1/20W |
| C349 | 24108161 | Cap,Ceramic,Chip | 160PF | J 50V | R324 | 24011562 | Res,Chip | 5.6K | J 1/20W |
| C360 | 24293106 | Cap,Tantalum,Chip | 10MF | M 16V | R325 | 24011102 | Res,Chip | 1K | J 1/20W |
| C361 | 24293106 | Cap,Tantalum,Chip | 10MF | M 16V | R326 | 24011562 | Res,Chip | 5.6K | J 1/20W |
| C362 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V | R327 | 24011432 | Res,Chip | 4.3K | J 1/20W |
| C363 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R328 | 24011152 | Res,Chip | 1.5K | J 1/20W |
| C364 | 24108680 | Cap,Ceramic,Chip | 68PF | J 50V | R329 | 24011752 | Res,Chip | 7.5K | J 1/20W |
| C365 | 24108680 | Cap,Ceramic,Chip | 68PF | J 50V | R330 | 24011302 | Res,Chip | 3K | J 1/20W |
| C366 | 24619056 | Cap,EL,Chip | 4.7MF | M 25V | R331 | 24011152 | Res,Chip | 1.5K | J 1/20W |
| C367 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V | R332 | 24011132 | Res,Chip | 1.3K | J 1/20W |
| C368 | 24619036 | Cap,EL,Chip | 330MF | M 10V | R333 | 24011681 | Res,Chip | 680 | J 1/20W |
| C369 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R334 | 24011681 | Res,Chip | 680 | J 1/20W |
| C370 | 24619036 | Cap,EL,Chip | 330MF | M 10V | R335 | 24011152 | Res,Chip | 1.5K | J 1/20W |
| C371 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R336 | 24011105 | Res,Chip | 1M | J 1/20W |
| C372 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R337 | 24011222 | Res,Chip | 2.2K | J 1/20W |
| C373 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R338 | 24011182 | Res,Chip | 1.8K | J 1/20W |
| C374 | 24106820 | Cap,Ceramic,Chip | 82PF | J 50V | R339 | 24011112 | Res,Chip | 1K | J 1/20W |
| C375 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V | R340 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| C376 | 24619049 | Cap,EL,Chip | 10MF | M 16V | R341 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| C377 | 24630854 | Cap,Electrolytic | 10MF | M 16V | R342 | 24011102 | Res,Chip | 1K | J 1/20W |
| C378 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V | R344 | 24011182 | Res,Chip | 1.8K | J 1/20W |
| C379 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R345 | 24011681 | Res,Chip | 680 | J 1/20W |
| C380 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R346 | 24011134 | Res,Chip | 130K | J 1/20W |
| C381 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R347 | 24011272 | Res,Chip | 2.7K | J 1/20W |
| C801 | 24630854 | Cap,Electrolytic | 10MF | M 16V | R348 | 24011222 | Res,Chip | 2.2K | J 1/20W |
| C802 | 24630831 | Cap,Electrolytic | 1MF | M 50V | R349 | 24011333 | Res,Chip | 33K | J 1/20W |
| C803 | 24630854 | Cap,Electrolytic | 10MF | M 16V | R351 | 24693416 | Res,Variable,Chip | 5K | |
| C804 | 24630871 | Cap,Electrolytic | 220MF | M 4V | R352 | 24693417 | Res,Variable,Chip | 10K | |
| C805 | 24630831 | Cap,Electrolytic | 1MF | M 50V | R360 | 24011432 | Res,Chip | 4.3K | J 1/20W |
| C808 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R361 | 24011112 | Res,Chip | 1K | J 1/20W |
| C807 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R362 | 24011102 | Res,Chip | 1K | J 1/20W |
| C808 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R363 | 24011222 | Res,Chip | 2.2K | J 1/20W |
| C809 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R364 | 24011431 | Res,Chip | 430 | J 1/20W |
| C810 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R365 | 24011332 | Res,Chip | 3.3K | J 1/20W |
| C811 | 24105330 | Cap,Ceramic,Chip | 33PF | J 50V | R366 | 24011103 | Res,Chip | 10K | J 1/20W |
| C812 | 24105330 | Cap,Ceramic,Chip | 33PF | J 50V | R367 | 24011103 | Res,Chip | 10K | J 1/20W |
| C813 | 24630854 | Cap,Electrolytic | 10MF | M 16V | R368 | 24011332 | Res,Chip | 3.3K | J 1/20W |
| C814 | 24630854 | Cap,Electrolytic | 10MF | M 16V | R369 | 24011102 | Res,Chip | 1K | J 1/20W |
| C815 | 24105200 | Cap,Ceramic,Chip | 20PF | J 50V | R371 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| C816 | 24105510 | Cap,Ceramic,Chip | 51PF | J 50V | R372 | 24011122 | Res,Chip | 1.2K | J 1/20W |
| C817 | 24094760 | Cap,Chip | 0.1MF | Z 25V | R374 | 24011751 | Res,Chip | 750 | J 1/20W |
| C818 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R375 | 24872101 | Res,Chip | 100 | J 1/16W |
| C851 | 24093925 | Cap,Variable,Chip | 30PF | | R377 | 24011471 | Res,Chip | 470 | J 1/20W |
| C852 | 24093925 | Cap,Variable,Chip | 30PF | | R378 | 24011103 | Res,Chip | 10K | J 1/20W |
| C880 | 24094760 | Cap,Chip | 0.1MF | Z 25V | R379 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| C881 | 24100103 | Cap,Chip | 0.01MF | Z 50V | R380 | 24011222 | Res,Chip | 2.2K | J 1/20W |
| C902 | 24630850 | Cap,Electrolytic | 47MF | M 16V | R381 | 24011202 | Res,Chip | 2K | J 1/20W |
| C903 | 24630854 | Cap,Electrolytic | 10MF | M 16V | R382 | 24011102 | Res,Chip | 1K | J 1/20W |
| | | - RESISTORS - | | | R383 | 24011622 | Res,Chip | 6.2K | J 1/20W |
| R201 | 24011911 | Res,Chip | 91Ω | J 1/20W | R384 | 24872436 | Res,Chip | 43 | J 1/16W |
| R202 | 24011122 | Res,Chip | 1.2K | J 1/20W | R385 | 24011302 | Res,Chip | 3K | J 1/20W |
| R203 | 24011222 | Res,Chip | 2.2K | J 1/20W | R387 | 24011103 | Res,Chip | 10K | J 1/20W |
| R204 | 24011102 | Res,Chip | 1K | J 1/20W | R801 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| R205 | 24011222 | Res,Chip | 2.2K | J 1/20W | R802 | 24011562 | Res,Chip | 5.6K | J 1/20W |
| R206 | 24011242 | Res,Chip | 2.4K | J 1/20W | R803 | 24011202 | Res,Chip | 2K | J 1/20W |
| R207 | 24011242 | Res,Chip | 2.4K | J 1/20W | R804 | 24011683 | Res,Chip | 68K | J 1/20W |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | | LOCATION NUMBER | PART NUMBER | DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|
| R605 | 24011101 | Res, Chip | 10Ω | J 1/20W | P302 | 23901613 | Socket, 4P | |
| R606 | 24011101 | Res, Chip | 10Ω | J 1/20W | P303 | 23367466 | Plug, 3P | |
| R607 | 24011103 | Res, Chip | 10K | J 1/20W | P305 | 23901611 | Socket, 8P | |
| R608 | 24011102 | Res, Chip | 1K | J 1/20W | P308 | 23367478 | Plug, 2P | |
| R609 | 24011102 | Res, Chip | 1K | J 1/20W | P601 | 23367481 | Plug, 4P | |
| R610 | 24011122 | Res, Chip | 1.2K | J 1/20W | P602 | 23367486 | Plug, 5P | |
| R612 | 24090564 | Res Block, Chip | 10Kx4 | J 1/32W | P603 | 23367479 | Plug, 2P | |
| R613 | 24090562 | Res Block, Chip | 1Kx4 | J 1/32W | P604 | 23367478 | Plug, 15P | |
| R614 | 24011103 | Res, Chip | 10K | J 1/20W | P605 | 23367479 | Plug, 2P | |
| R617 | 24011471 | Res, Chip | 470 | J 1/20W | P606 | 23367481 | Plug, 4P | |
| R618 | 24090562 | Res Block, Chip | 1Kx4 | J 1/32W | P607 | 23367482 | Plug, 5P | |
| R619 | 24011102 | Res, Chip | 1K | J 1/20W | P608 | 23367479 | Plug, 2P | |
| R620 | 24011483 | Res, Chip | 18K | J 1/20W | P610 | 23367480 | Plug, 3P | |
| R621 | 24011333 | Res, Chip | 33K | J 1/20W | P611 | 23901608 | Socket, 14P | |
| R622 | 24011123 | Res, Chip | 12K | J 1/20W | P612 | 23365220 | Phone Jack | |
| R623 | 24011102 | Res, Chip | 1K | J 1/20W | P613 | 73163077 | Jack | |
| R624 | 24011102 | Res, Chip | 1K | J 1/20W | P804 | 23367485 | Plug, 8P | |
| R625 | 24011102 | Res, Chip | 1K | J 1/20W | P805 | 23367479 | Plug, 2P | |
| R627 | 24011472 | Res, Chip | 4.7K | J 1/20W | S630 | 23145430 | Push Switch, 1C1P | |
| R628 | 24011104 | Res, Chip | 100K | J 1/20W | S631 | 23145430 | Push Switch, 1C1P | |
| R629 | 24011103 | Res, Chip | 10K | J 1/20W | S632 | 23145430 | Push Switch, 1C1P | |
| R630 | 24090561 | Res Block, Chip | 470x4 | J 1/32W | S633 | 23145430 | Push Switch, 1C1P | |
| R631 | 24011471 | Res, Chip | 470 | J 1/20W | S634 | 23145430 | Push Switch, 1C1P | |
| R632 | 24011471 | Res, Chip | 470 | J 1/20W | X201 | 70138102 | 1M Delay Line | |
| R633 | 24011471 | Res, Chip | 470 | J 1/20W | Z201 | 23107614 | Filter, 4.21MHz, TLC1109 | |
| R634 | 24011682 | Res, Chip | 6.8K | J 1/20W | Z202 | 23107615 | Filter, 1.4MHz, TLC1110 | |
| R637 | 24011102 | Res, Chip | 1K | J 1/20W | Z203 | 23107616 | Filter, 3.58MHz, TLC1111 | |
| R638 | 24011472 | Res, Chip | 4.7K | J 1/20W | Z301 | 23107617 | Filter, TLC1112 | |
| R640 | 24011430 | Res, Chip | 43 | J 1/20W | Z601 | 70153175 | Ceramic Resonator, KBR-4.19MS | |
| R641 | 24872121 | Res, Chip | 120 | J 1/10W | Z902 | 23153680 | Crystal, 32.768kHz | |
| R642 | 24871201 | Res, Chip | 200 | J 1/8W | | | | |
| R643 | 24871301 | Res, Chip | 300 | J 1/8W | ■ U501 | 70197823 | P C Board Assy, MOTHER 1 | |
| R644 | 24011105 | Res, Chip | 1M | J 1/20W | | | - INTEGRATED CIRCUITS - | |
| R645 | 24011312 | Res, Chip | 9.1K | J 1/20W | Q101 | 70119577 | IC | M51459FP |
| R646 | 24011273 | Res, Chip | 27K | J 1/20W | Q102 | 70119555 | IC | BU3756K |
| R647 | 24011514 | Res, Chip | 510K | J 1/20W | Q501 | 70119572 | IC | BU972K |
| R648 | 24011913 | Res, Chip | 91K | J 1/20W | Q502 | 70119576 | IC | UPC3242Z |
| R649 | 24011105 | Res, Chip | 1M | J 1/20W | Q503 | 70135087 | IC | Cylinder Trap |
| R651 | 24089415 | Res, Variable, Chip | 2K | | Q504 | 70119566 | IC | UPC3582Z |
| R661 | 24090594 | Res Block, Chip | 10Kx4 | J 1/32W | Q505 | 70119573 | IC | MS1736FP |
| R662 | 24011103 | Res, Chip | 10K | J 1/20W | Q509 | BD67535 | IC | TC4053BF-T1 |
| R663 | 24011471 | Res, Chip | 470 | J 1/20W | Q701 | 70119790 | IC | BA7751ALS |
| R664 | 24011471 | Res, Chip | 470 | J 1/20W | Q702 | 70119791 | IC | BA755 |
| R665 | 24011471 | Res, Chip | 470 | J 1/20W | Q801 | 70119910 | IC | TMP47C880F |
| R668 | 24011103 | Res, Chip | 10K | J 1/20W | Q802 | 70119571 | IC | MS4543SL |
| R697 | 24011102 | Res, Chip | 1K | J 1/20W | Q803 | 70119566 | IC | UPC3582Z |
| R698 | 24011102 | Res, Chip | 1K | J 1/20W | ▲Q720 | 70137136 | IC | EXA615 |
| R699 | 24011102 | Res, Chip | 1K | J 1/20W | Q724 | 70119875 | IC | VC50266 |
| R671 | 24011103 | Res, Chip | 10K | J 1/20W | | | - TRANSISTORS - | |
| R674 | 24011683 | Res, Chip | 68K | J 1/20W | Q103 | A6358872 | Transistor, Chip | 2SC3326-B |
| R675 | 24011683 | Res, Chip | 68K | J 1/20W | Q104 | A6358872 | Transistor, Chip | 2SC3326-B |
| R680 | 24090566 | Res Block, Chip | 680x4 | J 1/32W | Q105 | A6358872 | Transistor, Chip | 2SC3326-B |
| R681 | 24090564 | Res Block, Chip | 10Kx4 | J 1/32W | Q106 | A6358872 | Transistor, Chip | 2SC3326-B |
| R682 | 24090565 | Res Block, Chip | 15Kx4 | J 1/32W | Q107 | A6368621 | Transistor, Chip | 2SC4116-Y |
| R683 | 24090565 | Res Block, Chip | 15Kx4 | J 1/32W | Q108 | 23214315 | Transistor, Chip | XN1212 |
| R684 | 24090562 | Res Block, Chip | 1Kx4 | J 1/32W | Q506 | 23214536 | Transistor, Chip | UN6113 |
| R685 | 24090562 | Res Block, Chip | 1Kx4 | J 1/32W | Q508 | A6335561 | Transistor, Chip | 2SC2714-Y |
| R686 | 24090564 | Res Block, Chip | 10Kx4 | J 1/32W | Q703 | A6542151 | Transistor, Chip | 2SA1162-Y |
| R687 | 24090563 | Res Block, Chip | 6.8Kx4 | J 1/32W | Q704 | A6335471 | Transistor, Chip | 2SC2712-Y |
| R688 | 24090562 | Res Block, Chip | 1Kx4 | J 1/32W | Q705 | A6335471 | Transistor, Chip | 2SC2712-Y |
| R689 | 24090562 | Res Block, Chip | 1Kx4 | J 1/32W | Q706 | 23214315 | Transistor, Chip | XN1212 |
| R691 | 24011103 | Res, Chip | 10K | J 1/20W | Q804 | A6014062 | Transistor, Chip | RN2406 |
| R692 | 24011103 | Res, Chip | 10K | J 1/20W | Q805 | A6004022 | Transistor, Chip | RN1402 |
| R801 | 24011681 | Res, Chip | 680 | J 1/20W | Q806 | A6014042 | Transistor, Chip | RN2404 |
| R802 | 24011122 | Res, Chip | 1.2K | J 1/20W | Q807 | 23214317 | Transistor, Chip | XN6501 |
| R803 | 24011242 | Res, Chip | 2.4K | J 1/20W | Q808 | A6549581 | Transistor, Chip | 2SA1586-G |
| R804 | 24011472 | Res, Chip | 4.7K | J 1/20W | Q809 | A6549581 | Transistor, Chip | 2SA1586-G |
| R851 | 24089414 | Res, Variable, Chip | 1K | | Q721 | 23214270 | Transistor, Chip | UN5212 |
| R861 | 24011472 | Res, Chip | 4.7K | J 1/20W | Q722 | 23214270 | Transistor, Chip | UN5212 |
| R862 | 24011913 | Res, Chip | 91K | J 1/20W | Q225 | A6543615 | Transistor, Chip | 2SA1213-Y |
| | | - MISCELLANEOUS - | | | Q226 | A6543615 | Transistor, Chip | 2SA1213-Y |
| D802 | 23118366 | IC Protector | ICP-N36 | | Q227 | A6543615 | Transistor, Chip | 2SA1213-Y |
| D803 | 23118369 | IC Protector | ICP-N15 | | | | - DIODES - | |
| F801 | 23144812 | Fuse, 125V, 4.0A | | | D501 | A7154051 | Diode, Chip | 1SS301 |
| P301 | 23901613 | Socket, 4P | | | D502 | A7150851 | Diode, Chip | 1SS184 |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|
| D701 | 23119041 | Diode,Chip | MA111 | |
| D702 | 70115213 | Diode,Zener,Chip | RD9.1M | |
| D703 | 23119041 | Diode,Chip | MA111 | |
| D803 | A7152755 | Diode,Chip | 1SS226 | |
| D804 | A7151102 | Diode,Chip | 1SS133 | |
| D805 | 23118042 | Diode,Chip | MA121 | |
| D806 | 23118042 | Diode,Chip | MA121 | |
| | | - COILS - | | |
| L101 | 23245305 | Coil,Chip | TRF4580C | |
| L102 | 23245918 | Coil,Chip | TRF4101C | |
| L103 | 23245918 | Coil,Chip | TRF4101C | |
| L104 | 23245918 | Coil,Chip | TRF4101C | |
| L105 | 23245310 | Coil,Chip | TRF4150C | |
| L106 | 23245312 | Coil,Chip | TRF4220C | |
| L107 | 23245918 | Coil,Chip | TRF4101C | |
| L701 | 70211651 | Coil,Peaking | | |
| L702 | 23245901 | Coil,Chip | TRF4331C | |
| LZ20 | 23221915 | Coil,Choke | TLM3059 | |
| | | - CAPACITORS - | | |
| C101 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C102 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C103 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C104 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C105 | 24296104 | Cap,Tantalum,Chip | 0.1MF | M 35V |
| C106 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C107 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C108 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C109 | 24296104 | Cap,Tantalum,Chip | 0.1MF | M 35V |
| C110 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C111 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C112 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C113 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C114 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C115 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C116 | 24296104 | Cap,Tantalum,Chip | 0.1MF | M 35V |
| C117 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C118 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C119 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C120 | 24296104 | Cap,Tantalum,Chip | 0.1MF | M 35V |
| C121 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C122 | 24619030 | Cap,EL,Chip | 47MF | M 6.3V |
| C123 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C124 | 24108110 | Cap,Ceramic,Chip | 11PF | J 50V |
| C125 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C126 | 24619030 | Cap,EL,Chip | 47MF | M 6.3V |
| C127 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C128 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C129 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C130 | 24619036 | Cap,EL,Chip | 330MF | M 10V |
| C131 | 24108186 | Cap,Ceramic,Chip | 18PF | J 50V |
| C132 | 24108130 | Cap,Ceramic,Chip | 13PF | J 50V |
| C133 | 24108150 | Cap,Ceramic,Chip | 15PF | J 50V |
| C134 | 24108180 | Cap,Ceramic,Chip | 18PF | J 50V |
| C135 | 24108150 | Cap,Ceramic,Chip | 15PF | J 50V |
| C136 | 24108150 | Cap,Ceramic,Chip | 15PF | J 50V |
| C137 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C138 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C139 | 24285473 | Cap,Chip | 0.047MF | K 50V |
| C140 | 24285473 | Cap,Chip | 0.047MF | K 50V |
| C141 | 24285473 | Cap,Chip | 0.047MF | K 50V |
| C142 | 24285473 | Cap,Chip | 0.047MF | K 50V |
| C501 | 24095868 | Cap,Plastic | 4700PF | J 50V |
| C503 | 24095648 | Cap,Plastic | 0.068MF | J 50V |
| C504 | 24615103 | Cap,Chip | 0.01MF | K 50V |
| C505 | 24615103 | Cap,Chip | 0.01MF | K 50V |
| C506 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C507 | 24615103 | Cap,Chip | 0.01MF | K 50V |
| C508 | 24615103 | Cap,Chip | 0.01MF | K 50V |
| C509 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C510 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C511 | 24615103 | Cap,Chip | 0.01MF | K 50V |
| C512 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C513 | 24630859 | Cap,Electrolytic | 47MF | M 16V |
| C514 | 24102222 | Cap,Ceramic,Chip | 2200PF | K 50V |
| C515 | 24536224 | Cap,Plastic | 0.22MF | J 50V |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|
| C516 | 24108331 | Cap,Ceramic,Chip | 330PF | J 50V |
| C517 | 24095838 | Cap,Plastic | 0.01MF | J 50V |
| C518 | 24630831 | Cap,Electrolytic | 1MF | M 50V |
| C519 | 24630856 | Cap,Electrolytic | 47MF | M 6.3V |
| C520 | 24109102 | Cap,Ceramic,Chip | 1000PF | K 50V |
| C521 | 24630856 | Cap,Electrolytic | 47MF | M 6.3V |
| C522 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C523 | 24094760 | Cap,Chip | 0.1MF | Z 25V |
| C524 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C525 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C526 | 24105100 | Cap,Ceramic,Chip | 10PF | J 50V |
| C527 | 24094760 | Cap,Chip | 0.1MF | Z 25V |
| C528 | 24094760 | Cap,Chip | 0.1MF | Z 25V |
| C529 | 24781681 | Cap,Chip | 680PF | J 50V |
| C530 | 24105221 | Cap,Ceramic,Chip | 220PF | J 50V |
| C532 | 24109582 | Cap,Ceramic,Chip | 5600PF | K 50V |
| C701 | 24630886 | Cap,Electrolytic | 47MF | M 6.3V |
| C702 | 24630864 | Cap,Electrolytic | 100MF | M 6.3V |
| C703 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C704 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C705 | 24630867 | Cap,Electrolytic | 33MF | M 6.3V |
| C706 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C707 | 24630882 | Cap,Electrolytic | 10MF | M 10V |
| C708 | 24109981 | Cap,Ceramic,Chip | 680PF | K 50V |
| C709 | 24109272 | Cap,Ceramic,Chip | 2700PF | K 50V |
| C710 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C711 | 24630842 | Cap,Electrolytic | 2.2MF | M 35V |
| C712 | 24095655 | Cap,Plastic | 0.01MF | J 50V |
| C713 | 24630831 | Cap,Electrolytic | 1MF | M 50V |
| C714 | 24293105 | Cap,Tantalum,Chip | 1MF | M 16V |
| C715 | 24630858 | Cap,Electrolytic | 22MF | M 6.3V |
| C716 | 24630842 | Cap,Electrolytic | 2.2MF | M 35V |
| C717 | 24630886 | Cap,Electrolytic | 22MF | M 6.3V |
| C718 | 24630862 | Cap,Electrolytic | 10MF | M 10V |
| C719 | 24095692 | Cap,Plastic | 2700PF | J 50V |
| C720 | 24292225 | Cap,Tantalum,Chip | 2.2MF | M 10V |
| C721 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C722 | 24095656 | Cap,Plastic | 0.01MF | J 50V |
| C723 | 24095643 | Cap,Plastic | 0.027MF | J 50V |
| C724 | 24630850 | Cap,Electrolytic | 47MF | M 16V |
| C725 | 24095648 | Cap,Plastic | 0.068MF | J 50V |
| C726 | 24109471 | Cap,Ceramic,Chip | 470PF | K 50V |
| C727 | 24109822 | Cap,Ceramic,Chip | 8200PF | K 25V |
| C728 | 24109822 | Cap,Ceramic,Chip | 8200PF | K 25V |
| C729 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C730 | 24282475 | Cap,Tantalum,Chip | 4.7MF | M 10V |
| C731 | 24100472 | Cap,Chip | 4700PF | Z 50V |
| C801 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C802 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C803 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C804 | 24630854 | Cap,Electrolytic | 10MF | M 16V |
| C811 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C812 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C813 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C814 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C815 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C817 | 24105330 | Cap,Ceramic,Chip | 33PF | J 50V |
| C818 | 24105330 | Cap,Ceramic,Chip | 33PF | J 50V |
| C819 | 24105470 | Cap,Ceramic,Chip | 47PF | J 50V |
| C820 | 24105470 | Cap,Ceramic,Chip | 47PF | J 50V |
| C821 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C831 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| C901 | 24617958 | Cap,Electrolytic | 120MF | M 10V |
| C902 | 24617922 | Cap,Electrolytic | 27MF | M 16V |
| C903 | 24617922 | Cap,Electrolytic | 27MF | M 16V |
| C904 | 24617922 | Cap,Electrolytic | 27MF | M 16V |
| C905 | 24094753 | Cap,Chip | 0.022MF | K 25V |
| C906 | 24094753 | Cap,Chip | 0.022MF | K 25V |
| C907 | 24094753 | Cap,Chip | 0.022MF | K 25V |
| C908 | 24094753 | Cap,Chip | 0.022MF | K 25V |
| C909 | 24094753 | Cap,Chip | 0.022MF | K 25V |
| C910 | 24094753 | Cap,Chip | 0.022MF | K 25V |
| C911 | 24094753 | Cap,Chip | 0.022MF | K 25V |
| C912 | 24094753 | Cap,Chip | 0.022MF | K 25V |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | | LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|---|---|---|---|---|
| | | - RESISTORS - | | | R547 | 24011103 | Res,Chip | 10K | J 1/20W |
| R101 | 24011472 | Res,Chip | 4.7K | J 1/20W | R550 | 70421458 | Res,Variable | 470K | |
| R102 | 24011472 | Res,Chip | 4.7K | J 1/20W | R552 | 70421457 | Res,Variable | 200K | |
| R103 | 24011472 | Res,Chip | 4.7K | J 1/20W | R560 | 24011102 | Res,Chip | 1K | J 1/20W |
| R104 | 24011472 | Res,Chip | 4.7K | J 1/20W | R561 | 24011471 | Res,Chip | 470 | J 1/20W |
| R105 | 24011472 | Res,Chip | 4.7K | J 1/20W | R562 | 24011474 | Res,Chip | 470K | J 1/20W |
| R106 | 24011472 | Res,Chip | 4.7K | J 1/20W | R563 | 24011102 | Res,Chip | 1K | J 1/20W |
| R107 | 24011472 | Res,Chip | 4.7K | J 1/20W | R564 | 24011474 | Res,Chip | 470K | J 1/20W |
| R108 | 24011472 | Res,Chip | 4.7K | J 1/20W | R565 | 24011103 | Res,Chip | 10K | J 1/20W |
| R109 | 24011122 | Res,Chip | 1.2K | J 1/20W | R566 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| R110 | 24011102 | Res,Chip | 1K | J 1/20W | R567 | 24011105 | Res,Chip | 1M | J 1/20W |
| R111 | 24011152 | Res,Chip | 1.5K | J 1/20W | R568 | 24011473 | Res,Chip | 47K | J 1/20W |
| R112 | 24011102 | Res,Chip | 1K | J 1/20W | R569 | 24011561 | Res,Chip | 560 | J 1/20W |
| R117 | 24011102 | Res,Chip | 1K | J 1/20W | R570 | 24011103 | Res,Chip | 10K | J 1/20W |
| R116 | 24011222 | Res,Chip | 2.2K | J 1/20W | R571 | 24011473 | Res,Chip | 47K | J 1/20W |
| R119 | 24011122 | Res,Chip | 1.2K | J 1/20W | R572 | 24011103 | Res,Chip | 10K | J 1/20W |
| R120 | 24011111 | Res,Chip | 110 | J 1/20W | R701 | 24011562 | Res,Chip | 5.6K | J 1/20W |
| R121 | 24011331 | Res,Chip | 330 | J 1/20W | R702 | 24011183 | Res,Chip | 18K | J 1/20W |
| R122 | 24011102 | Res,Chip | 1K | J 1/20W | R703 | 24011473 | Res,Chip | 47K | J 1/20W |
| R123 | 24011302 | Res,Chip | 3K | J 1/20W | R704 | 24011272 | Res,Chip | 2.7K | J 1/20W |
| R124 | 24011302 | Res,Chip | 3K | J 1/20W | R705 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| R125 | 24011302 | Res,Chip | 3K | J 1/20W | R706 | 24011821 | Res,Chip | 820 | J 1/20W |
| R126 | 24011302 | Res,Chip | 3K | J 1/20W | R707 | 24011334 | Res,Chip | 330K | J 1/20W |
| R127 | 24011332 | Res,Chip | 3.3K | J 1/20W | R708 | 24011123 | Res,Chip | 12K | J 1/20W |
| R128 | 24011332 | Res,Chip | 3.3K | J 1/20W | R709 | 24011822 | Res,Chip | 8.2K | J 1/20W |
| R129 | 24011332 | Res,Chip | 3.3K | J 1/20W | R710 | 24011684 | Res,Chip | 680K | J 1/20W |
| R130 | 24011332 | Res,Chip | 3.3K | J 1/20W | R711 | 24011103 | Res,Chip | 10K | J 1/20W |
| R131 | 24011132 | Res,Chip | 1.3K | J 1/20W | R712 | 24011103 | Res,Chip | 10K | J 1/20W |
| R132 | 24011202 | Res,Chip | 2K | J 1/20W | R713 | 24011333 | Res,Chip | 33K | J 1/20W |
| R133 | 24011103 | Res,Chip | 10K | J 1/20W | R714 | 24011183 | Res,Chip | 18K | J 1/20W |
| R155 | 24069413 | Res,Variable,Chip | 200 | | R715 | 24011272 | Res,Chip | 2.7K | J 1/20W |
| R156 | 24069414 | Res,Variable,Chip | 1K | | R716 | 24011101 | Res,Chip | 100 | J 1/20W |
| R501 | 24011103 | Res,Chip | 10K | J 1/20W | R717 | 24011102 | Res,Chip | 1K | J 1/20W |
| R502 | 24011102 | Res,Chip | 1K | J 1/20W | R718 | 24011561 | Res,Chip | 560 | J 1/20W |
| R503 | 24011102 | Res,Chip | 1K | J 1/20W | R719 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| R504 | 24011102 | Res,Chip | 1K | J 1/20W | R720 | 24011103 | Res,Chip | 10K | J 1/20W |
| R505 | 24011102 | Res,Chip | 1K | J 1/20W | R721 | 24011103 | Res,Chip | 10K | J 1/20W |
| R506 | 24011103 | Res,Chip | 10K | J 1/20W | R722 | 24011273 | Res,Chip | 27K | J 1/20W |
| R507 | 24011102 | Res,Chip | 1K | J 1/20W | R723 | 24011273 | Res,Chip | 27K | J 1/20W |
| R508 | 24011102 | Res,Chip | 1K | J 1/20W | R724 | 24572120 | Res,Chip | 12 | J 1/10W |
| R510 | 24011202 | Res,Chip | 2K | J 1/20W | R725 | 24572120 | Res,Chip | 12 | J 1/10W |
| R511 | 24011154 | Res,Chip | 150K | J 1/20W | R726 | 24011100 | Res,Chip | 10 | J 1/20W |
| R514 | 24011102 | Res,Chip | 1K | J 1/20W | R727 | 24011512 | Res,Chip | 5.1K | J 1/20W |
| R515 | 24011103 | Res,Chip | 10K | J 1/20W | R750 | 70421456 | Res,Variable | 47K | |
| R516 | 24011104 | Res,Chip | 100K | J 1/20W | R751 | 70421435 | Res,Variable | 47K | |
| R517 | 24011105 | Res,Chip | 1M | J 1/20W | R801 | 24011102 | Res,Chip | 1K | J 1/20W |
| R518 | 24011154 | Res,Chip | 150K | J 1/20W | R802 | 24011102 | Res,Chip | 1K | J 1/20W |
| R519 | 24011184 | Res,Chip | 180K | J 1/20W | R803 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| R520 | 24011563 | Res,Chip | 56K | J 1/20W | R804 | 24011223 | Res,Chip | 22K | J 1/20W |
| R521 | 24011104 | Res,Chip | 100K | J 1/20W | R805 | 24011103 | Res,Chip | 10K | J 1/20W |
| R522 | 24011105 | Res,Chip | 1M | J 1/20W | R806 | 24011113 | Res,Chip | 11K | J 1/20W |
| R523 | 24011823 | Res,Chip | 82K | J 1/20W | R807 | 24011332 | Res,Chip | 3.3K | J 1/20W |
| R524 | 24011104 | Res,Chip | 100K | J 1/20W | R808 | 24011102 | Res,Chip | 1K | J 1/20W |
| R525 | 24011105 | Res,Chip | 1M | J 1/20W | R809 | 24011102 | Res,Chip | 1K | J 1/20W |
| R526 | 24011101 | Res,Chip | 100 | J 1/20W | R810 | 24011102 | Res,Chip | 1K | J 1/20W |
| R527 | 24011822 | Res,Chip | 8.2K | J 1/20W | R811 | 24011102 | Res,Chip | 1K | J 1/20W |
| R528 | 24011202 | Res,Chip | 2K | J 1/20W | R812 | 24011471 | Res,Chip | 470 | J 1/20W |
| R529 | 24011152 | Res,Chip | 1.5K | J 1/20W | R813 | 24011102 | Res,Chip | 1K | J 1/20W |
| R530 | 24011510 | Res,Chip | 51 | J 1/20W | R814 | 24011822 | Res,Chip | 8.2K | J 1/20W |
| R531 | 24011151 | Res,Chip | 150 | J 1/20W | R815 | 24011392 | Res,Chip | 3.9K | J 1/20W |
| R532 | 24011103 | Res,Chip | 10K | J 1/20W | R816 | 24011202 | Res,Chip | 2K | J 1/20W |
| R533 | 24011333 | Res,Chip | 33K | J 1/20W | R817 | 24011102 | Res,Chip | 1K | J 1/20W |
| R534 | 24011153 | Res,Chip | 15K | J 1/20W | R818 | 24011681 | Res,Chip | 680 | J 1/20W |
| R535 | 24011514 | Res,Chip | 510K | J 1/20W | R819 | 24011471 | Res,Chip | 470 | J 1/20W |
| R536 | 24011102 | Res,Chip | 1K | J 1/20W | R821 | 24011153 | Res,Chip | 15K | J 1/20W |
| R537 | 24011273 | Res,Chip | 27K | J 1/20W | R822 | 24011153 | Res,Chip | 15K | J 1/20W |
| R538 | 24011753 | Res,Chip | 75K | J 1/20W | R823 | 24011102 | Res,Chip | 1K | J 1/20W |
| R539 | 24011244 | Res,Chip | 240K | J 1/20W | R824 | 24011103 | Res,Chip | 10K | J 1/20W |
| R540 | 24011304 | Res,Chip | 300K | J 1/20W | R825 | 24011103 | Res,Chip | 10K | J 1/20W |
| R541 | 24011222 | Res,Chip | 2.2K | J 1/20W | R826 | 24011102 | Res,Chip | 1K | J 1/20W |
| R542 | 24011331 | Res,Chip | 330 | J 1/20W | R827 | 24011153 | Res,Chip | 15K | J 1/20W |
| R543 | 24011103 | Res,Chip | 10K | J 1/20W | R828 | 24011102 | Res,Chip | 1K | J 1/20W |
| R544 | 24011333 | Res,Chip | 33K | J 1/20W | R829 | 24011102 | Res,Chip | 1K | J 1/20W |
| R545 | 24011153 | Res,Chip | 15K | J 1/20W | R830 | 24011682 | Res,Chip | 6.8K | J 1/20W |
| R546 | 24011103 | Res,Chip | 10K | J 1/20W | R831 | 24011682 | Res,Chip | 6.8K | J 1/20W |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | |
|---|---|---|---|
| RR32 | 24011582 | Res,Chip | 8.8K J 1/20W |
| RR33 | 24011433 | Res,Chip | 43K J 1/20W |
| RR34 | 24011154 | Res,Chip | 150K J 1/20W |
| RR37 | 24011754 | Res,Chip | 750K J 1/20W |
| RR38 | 24011754 | Res,Chip | 750K J 1/20W |
| RR39 | 24011223 | Res,Chip | 22K J 1/20W |
| RR40 | 24011223 | Res,Chip | 22K J 1/20W |
| RR41 | 24011392 | Res,Chip | 3.9K J 1/20W |
| RR42 | 24011392 | Res,Chip | 3.9K J 1/20W |
| RR43 | 24011473 | Res,Chip | 47K J 1/20W |
| RR44 | 24011473 | Res,Chip | 47K J 1/20W |
| RR45 | 24011363 | Res,Chip | 36K J 1/20W |
| RR46 | 24011363 | Res,Chip | 36K J 1/20W |
| RR47 | 24011752 | Res,Chip | 7.5K J 1/20W |
| RR48 | 24011752 | Res,Chip | 7.5K J 1/20W |
| RR80 | 24011471 | Res,Chip | 470 J 1/20W |
| RR81 | 24011471 | Res,Chip | 470 J 1/20W |
| RR82 | 24011471 | Res,Chip | 470 J 1/20W |
| RR83 | 24011471 | Res,Chip | 470 J 1/20W |
| RR84 | 24011103 | Res,Chip | 10K J 1/20W |
| RR85 | 24011103 | Res,Chip | 10K J 1/20W |
| RR86 | 24011331 | Res,Chip | 330 J 1/20W |
| RR87 | 24011621 | Res,Chip | 620 J 1/20W |
| RR90 | 24000565 | Res Block,Chip | 1.56x4 J 1/32W |
| RR92 | 24000563 | Res Block,Chip | 6.86x4 J 1/32W |
| RR93 | 24000562 | Res Block,Chip | 1Kx4 J 1/32W |
| RR94 | 24000563 | Res Block,Chip | 6.86x4 J 1/32W |
| RR95 | 24000562 | Res Block,Chip | 1Kx4 J 1/32W |
| RR96 | 24000562 | Res Block,Chip | 1Kx4 J 1/32W |
| RZ20 | 24011104 | Res,Chip | 100K J 1/20W |
| RZ21 | 24011473 | Res,Chip | 47K J 1/20W |
| RZ22 | 24011560 | Res,Chip | 56 J 1/20W |
| RZ26 | 24011683 | Res,Chip | 68K J 1/20W |
| RZ27 | 24011183 | Res,Chip | 18K J 1/20W |
| RZ28 | 24011103 | Res,Chip | 10K J 1/20W |
| RZ29 | 24011103 | Res,Chip | 10K J 1/20W |
| RZ30 | 24011103 | Res,Chip | 10K J 1/20W |
| RZ31 | 24011560 | Res,Chip | 56 J 1/20W |
| | | - MISCELLANEOUS - | |
| ⚠DR01 | 23118387 | IC Protector | ICP-N25 |
| ⚠DZ20 | 23118365 | IC Protector | ICP-N20 |
| PJ03 | 23801081 | Connector,FPC 8P | |
| PJ01 | 23367481 | Plug,4P | |
| PJ02 | 23367465 | Plug,2P | |
| PJ01 | 23367483 | Plug,8P | |
| PJ02 | 23367479 | Plug,2P | |
| PJ03 | 23367489 | Plug,3P | |
| PJ04 | 23367480 | Plug,3P | |
| PJ05 | 23367484 | Plug,7P | |
| PJ06 | 23367479 | Plug,2P | |
| PR01 | 23367479 | Plug,2P | |
| PR02 | 23367480 | Plug,3P | |
| PR03 | 23367481 | Plug,4P | |
| PR05 | 23367479 | Plug,2P | |
| PR06 | 23367479 | Plug,2P | |
| PR11 | 23801104 | Connector,FPC 6P | |
| PZ20 | 23801033 | Socket,10P | |
| PZ21 | 23801085 | Connector,FPC 15P | |
| WD35 | 70179064 | Wire | |
| XR01 | 70119881 | Photo Interrupter | GP1S52 |
| ZR01 | 23224028 | Coil,Oscillator | TLN106Z |
| ZR01 | 70153175 | Ceramic Resonator,KBR-4.19MS | |
| ■ US01 | 70198941 | P C Board Assy,SW Back | |
| | | - DIODES - | |
| D680 | A8890430 | Diode,LED | TLUR123 |
| D681 | A8890430 | Diode,LED | TLUR123 |
| | | - MISCELLANEOUS - | |
| PS07 | 23367486 | Plug,9P | |
| PS08 | 23367481 | Plug,4P | |
| SR12 | 23145441 | Push Switch,1C1P | |
| SR13 | 23145441 | Push Switch,1C1P | |
| SR14 | 23145441 | Push Switch,1C1P | |
| SR15 | 23145478 | Slide Switch,1C2P | |
| SR16 | 70143563 | Slide Switch | |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | |
|---|---|---|---|
| SR17 | 70145363 | Slide Switch | |
| ■ US02 | 70198942 | P C Board Assy,SW Jack | |
| | | - MISCELLANEOUS - | |
| PM10 | 23365201 | Phone Jack | |
| PM11 | 23365201 | Phone Jack | |
| ■ US03 | 70198943 | P C Board Assy,SW Grip | |
| | | - MISCELLANEOUS - | |
| PS05 | 23367479 | Plug,2P | |
| SR11 | 70145363 | Switch | |
| ■ US05 | 70198944 | P C Board Assy,SW Manual | |
| | | - MISCELLANEOUS - | |
| PS06 | 23367481 | Plug,4P | |
| PS09 | 23367478 | Plug,2P | |
| SR18 | 23145519 | Push Switch,1C1P | |
| SR19 | 23145519 | Push Switch,1C1P | |
| SR20 | 23145519 | Push Switch,1C1P | |
| SR21 | 23145519 | Push Switch,1C1P | |
| ■ UA01 | 70198945 | P C Board Assy,White Balance | |
| | | - INTEGRATED CIRCUITS - | |
| QA01 | 70119809 | IC | HA11844MP |
| QA02 | B0347241 | IC | TA75339F |
| QA03 | B0347241 | IC | TA75339F |
| QA13 | 70119566 | IC | UPC35862 |
| | | - TRANSISTORS - | |
| QA04 | 23314314 | Transistor,Chip | XN4501 |
| QA05 | 23314314 | Transistor,Chip | XN4501 |
| QA06 | 23314315 | Transistor,Chip | XN4601 |
| QA07 | A5365821 | Transistor,Chip | 2SC4116-Y |
| QA08 | A8549571 | Transistor,Chip | 2SA1586-Y |
| QA09 | A5365821 | Transistor,Chip | 2SC4116-Y |
| | | - COILS - | |
| LA01 | 23245302 | Coil,Chip | TRF4330C |
| LA02 | 23245302 | Coil,Chip | TRF4330C |
| | | - CAPACITORS - | |
| CA01 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA02 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA03 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA04 | 24109472 | Cap,Ceramic,Chip | 4700PF K 50V |
| CA05 | 24109472 | Cap,Ceramic,Chip | 4700PF K 50V |
| CA06 | 24109472 | Cap,Ceramic,Chip | 4700PF K 50V |
| CA07 | 24519018 | Cap,EL,Chip | 33MF M 4V |
| CA08 | 24251225 | Cap,Tantalum,Chip | 2.2MF M 6.3V |
| CA09 | 24295224 | Cap,Tantalum,Chip | 0.22MF M 35V |
| CA11 | 24295224 | Cap,Tantalum,Chip | 0.22MF M 35V |
| CA13 | 24293105 | Cap,Tantalum,Chip | 1MF M 16V |
| CA14 | 24293105 | Cap,Tantalum,Chip | 1MF M 16V |
| CA15 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA16 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA17 | 24109471 | Cap,Ceramic,Chip | 470PF K 50V |
| CA18 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA19 | 24250475 | Cap,Tantalum,Chip | 4.7MF M 4V |
| CA20 | 24618077 | Cap,EL,Chip | 15MF M 10V |
| CA21 | 24618026 | Cap,EL,Chip | 220MF M 6.3V |
| CA22 | 24100103 | Cap,Chip | 0.01MF Z 50V |
| CA23 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA24 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA27 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA28 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA29 | 24109102 | Cap,Ceramic,Chip | 1000PF K 50V |
| CA31 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| CA32 | 24034760 | Cap,Chip | 0.1MF Z 25V |
| | | - RESISTORS - | |
| RA01 | 24011102 | Res,Chip | 1K J 1/20W |
| RA02 | 24011332 | Res,Chip | 3.3K J 1/20W |
| RA03 | 24011622 | Res,Chip | 6.2K J 1/20W |
| RA04 | 24011552 | Res,Chip | 1.5K J 1/20W |
| RA05 | 24011102 | Res,Chip | 1K J 1/20W |
| RA06 | 24011332 | Res,Chip | 3.3K J 1/20W |
| RA07 | 24011333 | Res,Chip | 33K J 1/20W |
| RA08 | 24011622 | Res,Chip | 6.2K J 1/20W |
| RA09 | 24011552 | Res,Chip | 1.5K J 1/20W |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | | LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|---|---|---|---|---|
| RA10 | 24011202 | Res,Chip | 2K | J 1/20W | RA93 | 24011105 | Res,Chip | 1M | J 1/20W |
| RA11 | 24011222 | Res,Chip | 2.2K | J 1/20W | RA94 | 24011624 | Res,Chip | 620K | J 1/20W |
| RA12 | 24011202 | Res,Chip | 2K | J 1/20W | RA95 | 24011272 | Res,Chip | 2.7K | J 1/20W |
| RA13 | 24011332 | Res,Chip | 3.3K | J 1/20W | RA96 | 24872225 | Res,Chip | 2.2M | J 1/10W |
| RA14 | 24011152 | Res,Chip | 1.5K | J 1/20W | RA97 | 24872475 | Res,Chip | 4.7M | K 1/10W |
| RA15 | 24011271 | Res,Chip | 270 | J 1/20W | RA98 | 24872475 | Res,Chip | 4.7M | K 1/10W |
| RA16 | 24011271 | Res,Chip | 270 | J 1/20W | RA99 | 24011104 | Res,Chip | 100K | J 1/20W |
| RA17 | 24011271 | Res,Chip | 270 | J 1/20W | RB01 | 24011754 | Res,Chip | 750K | J 1/20W |
| RA18 | 24011153 | Res,Chip | 15K | J 1/20W | RB02 | 24011564 | Res,Chip | 560K | J 1/20W |
| RA19 | 24011153 | Res,Chip | 15K | J 1/20W | RB03 | 24011153 | Res,Chip | 15K | J 1/20W |
| RA20 | 24011153 | Res,Chip | 15K | J 1/20W | | | - MISCELLANEOUS - | | |
| RA21 | 24011472 | Res,Chip | 4.7K | J 1/20W | PA01 | 23901498 | Connector 14P | | |
| RA22 | 24011473 | Res,Chip | 47K | J 1/20W | PA02 | 23367468 | Plug,5P | | |
| RA23 | 24872475 | Res,Chip | 4.7M | K 1/16W | UM01 | 70139546 | P C Board Assy,Mic amp | | |
| RA24 | 24872475 | Res,Chip | 4.7M | K 1/16W | | | - INTEGRATED CIRCUITS - | | |
| RA25 | 24011473 | Res,Chip | 47K | J 1/20W | QM01 | 80356521 | IC | TA75559F | |
| RA26 | 24011153 | Res,Chip | 15K | J 1/20W | QM21 | 23318051 | IC | NJM386M | |
| RA27 | 24011392 | Res,Chip | 3.9K | J 1/20W | | | - TRANSISTORS - | | |
| RA28 | 24011393 | Res,Chip | 39K | J 1/20W | QM02 | A6386521 | Transistor,Chip | 2SC4116-Y | |
| RA29 | 24011243 | Res,Chip | 24K | J 1/20W | QM03 | A6356572 | Transistor,Chip | 2SC3326-R | |
| RA30 | 24011823 | Res,Chip | 82K | J 1/20W | QM04 | A5365521 | Transistor,Chip | 2SC4116-Y | |
| RA31 | 24011153 | Res,Chip | 15K | J 1/20W | QM22 | A6335471 | Transistor,Chip | 2SC2712-Y | |
| RA32 | 24011104 | Res,Chip | 100K | J 1/20W | | | - DIODES - | | |
| RA33 | 24011332 | Res,Chip | 3.3K | J 1/20W | DE90 | A8660430 | Diode,LED | TLUR123 | |
| RA34 | 24011153 | Res,Chip | 15K | J 1/20W | DM01 | 23118041 | Diode,Chip | MA111 | |
| RA35 | 24011273 | Res,Chip | 27K | J 1/20W | DM02 | 70115213 | Diode,Zener,Chip | RD6.1M | |
| RA36 | 24011273 | Res,Chip | 27K | J 1/20W | | | - CAPACITORS - | | |
| RA37 | 24011273 | Res,Chip | 27K | J 1/20W | CM01 | 24530831 | Cap,Electrolytic | 1MF | M 50V |
| RA38 | 24011273 | Res,Chip | 27K | J 1/20W | CM02 | 24109332 | Cap,Ceramic,Chip | 330DPF | K 50V |
| RA39 | 24011333 | Res,Chip | 33K | J 1/20W | CM03 | 24295223 | Cap,Tantalum,Chip | 0.22MF | M 35V |
| RA40 | 24011273 | Res,Chip | 27K | J 1/20W | CM04 | 24295223 | Cap,Tantalum,Chip | 0.22MF | M 35V |
| RA41 | 24011681 | Res,Chip | 680 | J 1/20W | CM05 | 24530848 | Cap,Electrolytic | 4.7MF | M 25V |
| RA42 | 24011472 | Res,Chip | 4.7K | J 1/20W | CM06 | 24108331 | Cap,Ceramic,Chip | 330PF | J 50V |
| RA43 | 24011473 | Res,Chip | 47K | J 1/20W | CM07 | 24530831 | Cap,Electrolytic | 1MF | M 50V |
| RA44 | 24011273 | Res,Chip | 27K | J 1/20W | CM08 | 24530831 | Cap,Electrolytic | 1MF | M 50V |
| RA45 | 24011153 | Res,Chip | 15K | J 1/20W | CM10 | 24530864 | Cap,Electrolytic | 100MF | M 6.3V |
| RA46 | 24011473 | Res,Chip | 47K | J 1/20W | CM11 | 24530866 | Cap,Electrolytic | 47MF | M 6.3V |
| RA47 | 24011472 | Res,Chip | 4.7K | J 1/20W | CM12 | 24530866 | Cap,Electrolytic | 47MF | M 6.3V |
| RA48 | 24011123 | Res,Chip | 12K | J 1/20W | CM13 | 24109103 | Cap,Chip | 0.01MF | Z 50V |
| RA49 | 24011273 | Res,Chip | 27K | J 1/20W | CM15 | 24530864 | Cap,Electrolytic | 100MF | M 6.3V |
| RA50 | 24069421 | Res,Variable,Chip | 200K | | CM16 | 24530864 | Cap,Electrolytic | 100MF | M 6.3V |
| RA51 | 24069421 | Res,Variable,Chip | 200K | | CM21 | 24109102 | Cap,Ceramic,Chip | 1000PF | K 50V |
| RA52 | 24069421 | Res,Variable,Chip | 200K | | CM22 | 24530850 | Cap,Electrolytic | 47MF | M 16V |
| RA60 | 24011273 | Res,Chip | 27K | J 1/20W | CM23 | 24530866 | Cap,Electrolytic | 47MF | M 6.3V |
| RA61 | 24011105 | Res,Chip | 1M | J 1/20W | CM24 | 24530864 | Cap,Electrolytic | 100MF | M 6.3V |
| RA62 | 24011563 | Res,Chip | 56K | J 1/20W | | | - RESISTORS - | | |
| RA63 | 24011563 | Res,Chip | 56K | J 1/20W | RS53 | 24069422 | Res,Variable | 500 | |
| RA64 | 24011273 | Res,Chip | 27K | J 1/20W | RS90 | 24572121 | Res,Chip | 120 | J 1/1W |
| RA65 | 24011153 | Res,Chip | 15K | J 1/20W | RM01 | 24011103 | Res,Chip | 10K | J 1/20W |
| RA66 | 24011222 | Res,Chip | 2.2K | J 1/20W | RM02 | 24011333 | Res,Chip | 33K | J 1/20W |
| RA67 | 24011105 | Res,Chip | 1M | J 1/20W | RM03 | 24011583 | Res,Chip | 68K | J 1/20W |
| RA68 | 24011394 | Res,Chip | 390K | J 1/20W | RM04 | 24011102 | Res,Chip | 1K | J 1/20W |
| RA69 | 24011474 | Res,Chip | 470K | J 1/20W | RM05 | 24011333 | Res,Chip | 33K | J 1/20W |
| RA70 | 24011224 | Res,Chip | 220K | J 1/20W | RM07 | 24011473 | Res,Chip | 47K | J 1/20W |
| RA71 | 24011224 | Res,Chip | 220K | J 1/20W | RM08 | 24011473 | Res,Chip | 47K | J 1/20W |
| RA72 | 24011474 | Res,Chip | 470K | J 1/20W | RM09 | 24011181 | Res,Chip | 180 | J 1/20W |
| RA73 | 24011304 | Res,Chip | 300K | J 1/20W | RM10 | 24011103 | Res,Chip | 10K | J 1/20W |
| RA74 | 24011754 | Res,Chip | 750K | J 1/20W | RM11 | 24011103 | Res,Chip | 10K | J 1/20W |
| RA75 | 24011105 | Res,Chip | 1M | J 1/20W | RM12 | 24011102 | Res,Chip | 1K | J 1/20W |
| RA76 | 24011105 | Res,Chip | 1M | J 1/20W | RM13 | 24011203 | Res,Chip | 20K | J 1/20W |
| RA77 | 24011104 | Res,Chip | 100K | J 1/20W | RM14 | 24011273 | Res,Chip | 27K | J 1/20W |
| RA78 | 24011304 | Res,Chip | 300K | J 1/20W | RM15 | 24011102 | Res,Chip | 1K | J 1/20W |
| RA80 | 24011244 | Res,Chip | 240K | J 1/20W | RM16 | 24011823 | Res,Chip | 82K | J 1/20W |
| RA81 | 24011364 | Res,Chip | 360K | J 1/20W | RM17 | 24011564 | Res,Chip | 560K | J 1/20W |
| RA82 | 24011824 | Res,Chip | 820K | J 1/20W | RM18 | 24011103 | Res,Chip | 10K | J 1/20W |
| RA83 | 24011224 | Res,Chip | 220K | J 1/20W | RM19 | 24011104 | Res,Chip | 100K | J 1/20W |
| RA84 | 24011104 | Res,Chip | 100K | J 1/20W | RM20 | 24011332 | Res,Chip | 3.3K | J 1/20W |
| RA85 | 24011104 | Res,Chip | 100K | J 1/20W | RM21 | 24011103 | Res,Chip | 10K | J 1/20W |
| RA86 | 24011104 | Res,Chip | 100K | J 1/20W | RM22 | 24011104 | Res,Chip | 100K | J 1/20W |
| RA87 | 24011105 | Res,Chip | 1M | J 1/20W | RM23 | 24011563 | Res,Chip | 56K | J 1/20W |
| RA88 | 24011104 | Res,Chip | 100K | J 1/20W | RM24 | 24011272 | Res,Chip | 2.7K | J 1/20W |
| RA89 | 24011393 | Res,Chip | 39K | J 1/20W | RM25 | 24011103 | Res,Chip | 10K | J 1/20W |
| RA90 | 24011564 | Res,Chip | 560K | J 1/20W | RM26 | 24011220 | Res,Chip | 22 | J 1/20W |
| RA91 | 24011814 | Res,Chip | 810K | J 1/20W | | | - MISCELLANEOUS - | | |
| RA92 | 24011333 | Res,Chip | 33K | J 1/20W | | | | | |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|
| PM01 | 23367467 | Plug, 4P | | |
| PM02 | 23367468 | Plug, 5P | | |
| PM03 | 23367483 | Plug, 6P | | |
| PM04 | 23367492 | Plug, 15P | | |
| PM05 | 23367465 | Plug, 2P | | |
| PM06 | 23367467 | Plug, 4P | | |
| PM07 | 23367469 | Plug, 6P | | |
| PM08 | 23367465 | Plug, 2P | | |
| PM09 | 23367465 | Plug, 2P | | |
| SE01 | 23145563 | Push Switch,1C1P | | |
| SE02 | 23145563 | Push Switch,1C1P | | |
| SE03 | 23145563 | Push Switch,1C1P | | |
| SE04 | 23145563 | Push Switch,1C1P | | |
| SE05 | 23145563 | Push Switch,1C1P | | |
| SE06 | 23145563 | Push Switch,1C1P | | |
| SE07 | 23145430 | Push Switch,1C1P | | |
| SE08 | 23145430 | Push Switch,1C1P | | |
| ■ UZ01 | 70198947 | P C Board Assy,Motor Drive | | |
| | | - INTEGRATED CIRCUITS - | | |
| QZ01 | 70119920 | IC BA6452F | | |
| | | - DIODES - | | |
| DZ01 | A7154051 | Diode,Chip 1SS301 | | |
| | | - CAPACITORS - | | |
| CZ01 | 24630854 | Cap,Electrolytic 10MF | M 16V | |
| CZ02 | 24064744 | Cap,Chip 0.1MF | M 25V | |
| CZ03 | 24630854 | Cap,Electrolytic 10MF | M 16V | |
| CZ04 | 24630854 | Cap,Electrolytic 10MF | M 16V | |
| CZ05 | 24630854 | Cap,Electrolytic 10MF | M 16V | |
| CZ06 | 24034753 | Cap,Chip 0.022MF | K 25V | |
| CZ07 | 24034780 | Cap,Chip 0.1MF | Z 25V | |
| CZ08 | 24109471 | Cap,Ceramic,Chip 470PF | K 50V | |
| CZ09 | 24630854 | Cap,Electrolytic 10MF | M 16V | |
| CZ10 | 24630854 | Cap,Electrolytic 10MF | M 16V | |
| CZ11 | 24034760 | Cap,Chip 0.1MF | Z 25V | |
| CZ12 | 24034760 | Cap,Chip 0.1MF | Z 25V | |
| CZ13 | 24034780 | Cap,Chip 0.1MF | Z 25V | |
| | | - RESISTORS - | | |
| RZ01 | 24003686 | Res,Oxide Metal 0.68 | J 1/2W | |
| RZ02 | 24872229 | Res,Chip 2.2 | J 1/16W | |
| RZ03 | 24872229 | Res,Chip 2.2 | J 1/16W | |
| RZ04 | 24872229 | Res,Chip 2.2 | J 1/16W | |
| RZ05 | 24011102 | Res,Chip 1K | J 1/20W | |
| RZ06 | 24011104 | Res,Chip 100K | J 1/20W | |
| RZ07 | 24011163 | Res,Chip 15K | J 1/20W | |
| RZ08 | 24011222 | Res,Chip 2.2K | J 1/20W | |
| RZ09 | 24011101 | Res,Chip 100 | J 1/20W | |
| | | - MISCELLANEOUS - | | |
| PZ02 | 23901686 | Connector,FPC 16P | | |
| PZ03 | 23367479 | Plug,2P | | |
| ■ UH01 | 70198821 | P C Board Assy,Camera 1 | | |
| | | - INTEGRATED CIRCUITS - | | |
| QH02 | 70119582 | IC UPD5146G | | |
| QH03 | B693561F | IC TC6001F | | |
| QH04 | B9909006 | IC TC6020F | | |
| QH05 | 70118845 | IC AN2010S | | |
| QH06 | B0465635 | IC TC74BC004F | | |
| QH07 | B0486093 | IC TC74HC86F | | |
| QH08 | 70119850 | IC M5M6984 | | |
| | | - TRANSISTORS - | | |
| QH09 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH10 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH11 | A6335581 | Transistor,Chip 2SC2714-Y | | |
| QH12 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH13 | A6335471 | Transistor,Chip 2SC2712-Y | | |
| QH14 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH15 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH16 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH17 | A6549571 | Transistor,Chip 2SA1586-Y | | |
| QH18 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH19 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH20 | A6385621 | Transistor,Chip 2SC4116-Y | | |
| QH21 | A6385621 | Transistor,Chip 2SC4115-Y | | |
| QH22 | A6549372 | Transistor,Chip 2SA1362-GR | | |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|
| QH23 | A6385621 | Transistor,Chip | 2SC4116-Y | |
| QH24 | A6347422 | Transistor,Chip | 2SC2982-C | |
| QH25 | A6335581 | Transistor,Chip | 2SC2714-Y | |
| QH26 | A6385621 | Transistor,Chip | 2SC4116-Y | |
| | | - DIODES - | | |
| DH01 | A7150802 | Diode,Chip | 1SS187 | |
| DH02 | A7154051 | Diode,Chip | 1SS301 | |
| | | - COILS - | | |
| LH01 | 23245916 | Coil,Chip | TRF4330C | |
| LH02 | 23245916 | Coil,Chip | TRF4330C | |
| LH04 | 23245916 | Coil,Chip | TRF4330C | |
| LH05 | 23245916 | Coil,Chip | TRF4330C | |
| LH06 | 23245916 | Coil,Chip | TRF4330C | |
| LH07 | 23245916 | Coil,Chip | TRF4330C | |
| LH08 | 23245916 | Coil,Chip | TRF4330C | |
| LH09 | 23245916 | Coil,Chip | TRF4330C | |
| LH10 | 23245703 | Coil,Chip | TRF4101CS | |
| | | - CAPACITORS - | | |
| CH01 | 24619080 | Cap,EL,Chip | 6.8MF | M 25V |
| CH04 | 24613042 | Cap,EL,Chip | 22MF | M 16V |
| CH05 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH09 | 24068958 | Cap,Tantalum | 47MF | M 10V |
| CH11 | 24619077 | Cap,EL,Chip | 15MF | M 10V |
| CH12 | 24109368 | Cap,Ceramic,Chip | 6PF | D 50V |
| CH13 | 24109360 | Cap,Ceramic,Chip | 8PF | D 50V |
| CH14 | 24109369 | Cap,Ceramic,Chip | 9PF | D 50V |
| CH15 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH16 | 24619025 | Cap,EL,Chip | 220MF | M 6.3V |
| CH17 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH18 | 24291335 | Cap,Tantalum,Chip | 3.3MF | M 6.3V |
| CH19 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH20 | 24293335 | Cap,Tantalum,Chip | 3.3MF | M 16V |
| CH21 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH22 | 24618035 | Cap,EL,Chip | 330MF | M 10V |
| CH23 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH24 | 24619033 | Cap,EL,Chip | 47MF | M 6.3V |
| CH25 | 24068958 | Cap,Tantalum | 47MF | M 10V |
| CH26 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH27 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| CH28 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| CH29 | 24105100 | Cap,Ceramic,Chip | 10PF | J 50V |
| CH30 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH31 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH32 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH33 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH34 | 24105220 | Cap,Ceramic,Chip | 22MF | J 50V |
| CH35 | 24105470 | Cap,Ceramic,Chip | 47PF | J 50V |
| CH36 | 24105470 | Cap,Ceramic,Chip | 47PF | J 50V |
| CH37 | 24105470 | Cap,Ceramic,Chip | 47PF | J 50V |
| CH38 | 24105470 | Cap,Ceramic,Chip | 47PF | J 50V |
| CH39 | 24105470 | Cap,Ceramic,Chip | 47PF | J 50V |
| CH40 | 24105470 | Cap,Ceramic,Chip | 47PF | J 50V |
| CH41 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH42 | 24068958 | Cap,Tantalum | 47MF | M 10V |
| CH43 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH44 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH45 | 24105100 | Cap,Ceramic,Chip | 10PF | J 50V |
| CH46 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH47 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH48 | 24619034 | Cap,EL,Chip | 22MF | M 10V |
| CH49 | 24291335 | Cap,Tantalum,Chip | 3.3MF | M 6.3V |
| CH50 | 24106271 | Cap,Ceramic,Chip | 270PF | J 50V |
| CH51 | 24108301 | Cap,Ceramic,Chip | 300PF | J 50V |
| CH52 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH53 | 24619038 | Cap,EL,Chip | 330MF | M 10V |
| CH54 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH55 | 24618030 | Cap,EL,Chip | 47MF | M 6.3V |
| CH56 | 24064760 | Cap,Chip | 0.1MF | Z 25V |
| CH57 | 24105390 | Cap,Ceramic,Chip | 39PF | J 50V |
| CH58 | 24105180 | Cap,Ceramic,Chip | 18PF | J 50V |
| CH59 | 24105121 | Cap,Ceramic,Chip | 120PF | J 50V |
| CH60 | 24282475 | Cap,Tantalum,Chip | 4.7MF | M 10V |
| CH61 | 24282225 | Cap,Tantalum,Chip | 2.2MF | M 10V |
| CH62 | 24100103 | Cap,Chip | 0.01MF | Z 50V |
| CH63 | 24100103 | Cap,Chip | 0.01MF | Z 50V |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | | | | |
|---|---|---|---|---|---|---|---|
| CR54 | 24619026 | Cap,EL,Chip | 220MF | M 6.3V | | | |
| CR55 | 24619040 | Cap,EL,Chip | 10MF | M 16V | | | |
| CR66 | 24619040 | Cap,EL,Chip | 10MF | M 16V | | | |
| CR67 | 24619035 | Cap,EL,Chip | 330MF | M 10V | | | |
| CR68 | 24619020 | Cap,EL,Chip | 47MF | M 4V | | | |
| CR69 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CM70 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CM71 | 24292225 | Cap,Tantalum,Chip | 2.2MF | M 10V | | | |
| CM72 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CM73 | 24105100 | Cap,Ceramic,Chip | 10PF | J 50V | | | |
| CM74 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| | | - RESISTORS - | | | | | |
| RH06 | 24011272 | Res,Chip | 2.7K | J 1/20W | | | |
| RH07 | 24011271 | Res,Chip | 270 | J 1/20W | | | |
| RH11 | 24011513 | Res,Chip | 51K | J 1/20W | | | |
| RH12 | 24011123 | Res,Chip | 12K | J 1/20W | | | |
| RH13 | 24011432 | Res,Chip | 4.3K | J 1/20W | | | |
| RH14 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH15 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH16 | 24011182 | Res,Chip | 1.8K | J 1/20W | | | |
| RH17 | 24011751 | Res,Chip | 750 | J 1/20W | | | |
| RH18 | 24011162 | Res,Chip | 1K | J 1/20W | | | |
| RH19 | 24011222 | Res,Chip | 2.2K | J 1/20W | | | |
| RH20 | 24011133 | Res,Chip | 13K | J 1/20W | | | |
| RH21 | 24011432 | Res,Chip | 4.3K | J 1/20W | | | |
| RH22 | 24011392 | Res,Chip | 3.9K | J 1/20W | | | |
| RH23 | 24011432 | Res,Chip | 4.3K | J 1/20W | | | |
| RH24 | 24011243 | Res,Chip | 24K | J 1/20W | | | |
| RH25 | 24011822 | Res,Chip | 8.2K | J 1/20W | | | |
| RH27 | 24011105 | Res,Chip | 1M | J 1/20W | | | |
| RH28 | 24011100 | Res,Chip | 10 | J 1/20W | | | |
| RH29 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH30 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH31 | 24011101 | Res,Chip | 100 | J 1/20W | | | |
| RH32 | 24011201 | Res,Chip | 200 | J 1/20W | | | |
| RH33 | 24011221 | Res,Chip | 220 | J 1/20W | | | |
| RH34 | 24011181 | Res,Chip | 180 | J 1/20W | | | |
| RH35 | 24011562 | Res,Chip | 5.6K | J 1/20W | | | |
| RH36 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH37 | 24011561 | Res,Chip | 560 | J 1/20W | | | |
| RH38 | 24011152 | Res,Chip | 1.5K | J 1/20W | | | |
| RH39 | 24011153 | Res,Chip | 15K | J 1/20W | | | |
| RH40 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH41 | 24011222 | Res,Chip | 2.2K | J 1/20W | | | |
| RH42 | 24011472 | Res,Chip | 4.7K | J 1/20W | | | |
| RH43 | 24011472 | Res,Chip | 4.7K | J 1/20W | | | |
| RH44 | 24011472 | Res,Chip | 4.7K | J 1/20W | | | |
| RH45 | 24011222 | Res,Chip | 2.2K | J 1/20W | | | |
| RH46 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH47 | 24011332 | Res,Chip | 3.3K | J 1/20W | | | |
| RH49 | 24011152 | Res,Chip | 1.5K | J 1/20W | | | |
| RH51 | 70421437 | Res,Variable | 2.2K | | | | |
| RH50 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH51 | 24011102 | Res,Chip | 1K | J 1/20W | | | |
| RH52 | 24011152 | Res,Chip | 1.5K | J 1/20W | | | |
| RH53 | 24011152 | Res,Chip | 1.5K | J 1/20W | | | |
| RH54 | 24011392 | Res,Chip | 3.9K | J 1/20W | | | |
| RH55 | 24011122 | Res,Chip | 1.2K | J 1/20W | | | |
| RH56 | 24011472 | Res,Chip | 4.7K | J 1/20W | | | |
| RH57 | 24011222 | Res,Chip | 2.2K | J 1/20W | | | |
| RH58 | 24011823 | Res,Chip | 82K | J 1/20W | | | |
| RH59 | 24011392 | Res,Chip | 3.9K | J 1/20W | | | |
| RH70 | 24011473 | Res,Chip | 47K | J 1/20W | | | |
| RH71 | 24011473 | Res,Chip | 47K | J 1/20W | | | |
| RH72 | 24872331 | Res,Chip | 330 | J 1/16W | | | |
| RH73 | 24011152 | Res,Chip | 1.5K | J 1/20W | | | |
| RH74 | 24011103 | Res,Chip | 10K | J 1/20W | | | |
| RH75 | 24011821 | Res,Chip | 820 | J 1/20W | | | |
| RH76 | 24011391 | Res,Chip | 390 | J 1/20W | | | |
| RH77 | 24011822 | Res,Chip | 8.2K | J 1/20W | | | |
| RH78 | 24011242 | Res,Chip | 2.4K | J 1/20W | | | |
| RH79 | 24011272 | Res,Chip | 2.7K | J 1/20W | | | |
| RH80 | 24011821 | Res,Chip | 820 | J 1/20W | | | |
| RH81 | 24011332 | Res,Chip | 3.3K | J 1/20W | | | |
| | | - MISCELLANEOUS - | | | | | |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | | | | |
|---|---|---|---|---|---|---|---|
| PH03 | 23357468 | Plug,8P | | | | | |
| ZW01 | 70132338 | Crystal,21MHz | | | | | |
| ZH02 | 70132305 | Crystal,14MHz | | | | | |
| ZH03 | 70132261 | Trap,10MHz | | | | | |
| ZH04 | 70132282 | Filter | | | | | |
| UB01 | 70198950 | P C Board Assy,Head L | | | | | |
| | | - TRANSISTORS - | | | | | |
| QB02 | 70114209 | Transistor,Chip | 2SA1022-C | | | | |
| | | - COILS - | | | | | |
| LB01 | 23245836 | Coil,Chip | TRF4330CB | | | | |
| | | - CAPACITORS - | | | | | |
| CB01 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CB02 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CB03 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CB04 | 24295106 | Cap,Tantalum,Chip | 10MF | M 25V | | | |
| CB05 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CB06 | 24233226 | Cap,Tantalum,Chip | 22MF | M 16V | | | |
| CB07 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CB08 | 24100103 | Cap,Chip | 0.01MF | Z 50V | | | |
| | | - RESISTORS - | | | | | |
| RB01 | 24011332 | Res,Chip | 3.3K | J 1/20W | | | |
| RB02 | 24011101 | Res,Chip | 100 | J 1/20W | | | |
| RB03 | 24011101 | Res,Chip | 100 | J 1/20W | | | |
| RB04 | 24011752 | Res,Chip | 7.5K | J 1/20W | | | |
| RB05 | 24011221 | Res,Chip | 220 | J 1/20W | | | |
| RB06 | 24011123 | Res,Chip | 12K | J 1/20W | | | |
| RB07 | 24011432 | Res,Chip | 4.3K | J 1/20W | | | |
| RB50 | 70421430 | Res,Variable,Metal | 22K | | | | |
| | | - MISCELLANEOUS - | | | | | |
| PB01 | 23367465 | Plug,2P | | | | | |
| UD01 | 70198951 | P C Board Assy,Head R | | | | | |
| | | - TRANSISTORS - | | | | | |
| QB02 | 70114209 | Transistor,Chip | 2SA1022-C | | | | |
| | | - COILS - | | | | | |
| LD01 | 23245836 | Coil,Chip | TRF4330CB | | | | |
| | | - CAPACITORS - | | | | | |
| CD01 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CD02 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CD03 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CD04 | 24295106 | Cap,Tantalum,Chip | 10MF | M 25V | | | |
| CD05 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CD06 | 24233226 | Cap,Tantalum,Chip | 22MF | M 16V | | | |
| CD07 | 24094760 | Cap,Chip | 0.1MF | Z 25V | | | |
| CD08 | 24100103 | Cap,Chip | 0.01MF | Z 50V | | | |
| | | - RESISTORS - | | | | | |
| RD01 | 24011332 | Res,Chip | 3.3K | J 1/20W | | | |
| RD02 | 24011101 | Res,Chip | 100 | J 1/20W | | | |
| RD03 | 24011101 | Res,Chip | 100 | J 1/20W | | | |
| RD04 | 24011752 | Res,Chip | 7.5K | J 1/20W | | | |
| RD05 | 24011221 | Res,Chip | 220 | J 1/20W | | | |
| RD06 | 24011123 | Res,Chip | 12K | J 1/20W | | | |
| RD07 | 24011432 | Res,Chip | 4.3K | J 1/20W | | | |
| RD50 | 70421430 | Res,Variable,Metal | 22K | | | | |
| | | - MISCELLANEOUS - | | | | | |
| PD01 | 23367465 | Plug,2P | | | | | |
| UX01 | 70198948 | P C Board Assy,Iris Drive | | | | | |
| | | - INTEGRATED CIRCUITS - | | | | | |
| QX01 | 70119259 | IC | NJM3414M | | | | |
| QX02 | 70119259 | IC | NJM3414M | | | | |
| QX03 | 70119258 | IC | NJM3414M | | | | |
| QX04 | B0470451 | IC | TC4049BF | | | | |
| QX05 | B0470675 | IC | TC4053BF-T1 | | | | |
| QX06 | B0470675 | IC | TC4066BF-T1 | | | | |
| | | - TRANSISTORS - | | | | | |
| QX07 | A6335581 | Transistor,Chip | 2SC2714-Y | | | | |
| QX08 | 70114209 | Transistor,Chip | 2SA1022-C | | | | |
| QX09 | A6335521 | Transistor,Chip | 2SC4116-Y | | | | |
| QX10 | A6335521 | Transistor,Chip | 2SC4116-Y | | | | |
| QX11 | A6335521 | Transistor,Chip | 2SC4116-Y | | | | |
| | | - COILS - | | | | | |
| LX01 | 23245839 | Coil,Chip | TRF4560CB | | | | |
| LX02 | 23245839 | Coil,Chip | TRF4560CB | | | | |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|---|---|---|---|
| RV57 | 24069414 | Res,Variable,Chip | 1K | RV34 | 24011152 | Res,Chip | 1.8K | J 1/20W |
| RV58 | 24069414 | Res,Variable,Chip | 1K | RV35 | 24011103 | Res,Chip | 10K | J 1/20W |
| RV59 | 24069418 | Res,Variable,Chip | 5K | RV36 | 24011102 | Res,Chip | 1K | J 1/20W |
| RV60 | 24011821 | Res,Chip | 820 J 1/20W | RV37 | 24011352 | Res,Chip | 3.9K | J 1/20W |
| RV61 | 24011222 | Res,Chip | 2.2K J 1/20W | RV38 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| RV62 | 24011102 | Res,Chip | 1K J 1/20W | RV40 | 24011274 | Res,Chip | 270K | J 1/20W |
| RV63 | 24011751 | Res,Chip | 750 J 1/20W | RV41 | 24011203 | Res,Chip | 20K | J 1/20W |
| RV64 | 24011561 | Res,Chip | 560 J 1/20W | RV42 | 24011153 | Res,Chip | 15K | J 1/20W |
| RV65 | 24011102 | Res,Chip | 1K J 1/20W | RV43 | 24011153 | Res,Chip | 15K | J 1/20W |
| RV66 | 24011222 | Res,Chip | 2.2K J 1/20W | RV44 | 24011102 | Res,Chip | 1K | J 1/20W |
| RV67 | 24011272 | Res,Chip | 2.7K J 1/20W | RV45 | 24011332 | Res,Chip | 3.3K | J 1/20W |
| RV68 | 24011152 | Res,Chip | 1.5K J 1/20W | RV46 | 24011222 | Res,Chip | 2.2K | J 1/20W |
| RV69 | 24011473 | Res,Chip | 47K J 1/20W | RV47 | 24011332 | Res,Chip | 3.3K | J 1/20W |
| RV70 | 24011332 | Res,Chip | 3.3K J 1/20W | RV48 | 24011102 | Res,Chip | 1K | J 1/20W |
| RV71 | 24011182 | Res,Chip | 1.8K J 1/20W | RV49 | 24011122 | Res,Chip | 1.2K | J 1/20W |
| RV72 | 24011331 | Res,Chip | 330 J 1/20W | RV51 | 24069420 | Res,Variable,Chip | 100K | |
| RV73 | 24011391 | Res,Chip | 390 J 1/20W | RV52 | 24069414 | Res,Variable,Chip | 1K | |
| RV74 | 24011911 | Res,Chip | 910 J 1/20W | RV53 | 24069414 | Res,Variable,Chip | 1K | |
| RV75 | 24011391 | Res,Chip | 390 J 1/20W | RV54 | 24069414 | Res,Variable,Chip | 1K | |
| RV76 | 24011331 | Res,Chip | 330 J 1/20W | RV55 | 24069421 | Res,Variable,Chip | 200K | |
| RV77 | 24011132 | Res,Chip | 1.3K J 1/20W | RV56 | 24069421 | Res,Variable,Chip | 200K | |
| RV78 | 24011103 | Res,Chip | 10K J 1/20W | RV57 | 24069415 | Res,Variable,Chip | 2K | |
| RV79 | 24011223 | Res,Chip | 22K J 1/20W | RV58 | 24069416 | Res,Variable,Chip | 5K | |
| RV80 | 24011821 | Res,Chip | 820 J 1/20W | RV59 | 24069418 | Res,Variable,Chip | 20K | |
| RV81 | 24011102 | Res,Chip | 1K J 1/20W | RV61 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| RV83 | 24011182 | Res,Chip | 1.8K J 1/20W | RV62 | 24367332 | Res,Carbon | 3.3K | G 1/6W |
| RV84 | 24011332 | Res,Chip | 3.3K J 1/20W | RV63 | 24011562 | Res,Chip | 5.6K | J 1/20W |
| RV85 | 24011102 | Res,Chip | 1K J 1/20W | RV64 | 24011202 | Res,Chip | 2K | J 1/20W |
| RV86 | 24011751 | Res,Chip | 750 J 1/20W | RV65 | 24011331 | Res,Chip | 330 | J 1/20W |
| RV87 | 24011273 | Res,Chip | 27K J 1/20W | RV66 | 24011122 | Res,Chip | 1.2K | J 1/20W |
| RV88 | 24011102 | Res,Chip | 1K J 1/20W | RV67 | 24011471 | Res,Chip | 470 | J 1/20W |
| RV89 | 24011153 | Res,Chip | 15K J 1/20W | RV68 | 24011123 | Res,Chip | 12K | J 1/20W |
| RV90 | 24011333 | Res,Chip | 33K J 1/20W | RV69 | 24011222 | Res,Chip | 2.2K | J 1/20W |
| RV91 | 24011272 | Res,Chip | 2.7K J 1/20W | RV70 | 24011222 | Res,Chip | 2.2K | J 1/20W |
| RV92 | 24011273 | Res,Chip | 27K J 1/20W | RV71 | 24011102 | Res,Chip | 1K | J 1/20W |
| RV93 | 24011273 | Res,Chip | 27K J 1/20W | RV72 | 24011104 | Res,Chip | 100K | J 1/20W |
| RV94 | 24011123 | Res,Chip | 12K J 1/20W | RV73 | 24367562 | Res,Carbon | 5.6K | G 1/6W |
| RV95 | 24011102 | Res,Chip | 1K J 1/20W | RV74 | 24011102 | Res,Chip | 1K | J 1/20W |
| RV96 | 24011102 | Res,Chip | 1K J 1/20W | RV75 | 24367303 | Res,Carbon | 30K | G 1/6W |
| RV97 | 24011132 | Res,Chip | 1.3K J 1/20W | RV76 | 24011242 | Res,Chip | 2.4K | J 1/20W |
| RV98 | 24011103 | Res,Chip | 10K J 1/20W | RV77 | 24011471 | Res,Chip | 470 | J 1/20W |
| RV99 | 24011202 | Res,Chip | 2K J 1/20W | RV78 | 24011471 | Res,Chip | 470 | J 1/20W |
| RW01 | 24011512 | Res,Chip | 5.1K J 1/20W | RW79 | 24011122 | Res,Chip | 1.2K | J 1/20W |
| RW02 | 24011102 | Res,Chip | 1K J 1/20W | RW80 | 24011561 | Res,Chip | 560 | J 1/20W |
| RW03 | 24011122 | Res,Chip | 1.2K J 1/20W | RW81 | 24011472 | Res,Chip | 4.7K | J 1/20W |
| RW04 | 24011202 | Res,Chip | 2K J 1/20W | RW82 | 24011362 | Res,Chip | 3.6K | J 1/20W |
| RW05 | 24011272 | Res,Chip | 2.7K J 1/20W | RW83 | 24011431 | Res,Chip | 430 | J 1/20W |
| RW06 | 24011272 | Res,Chip | 2.7K J 1/20W | RW84 | 24011621 | Res,Chip | 620 | J 1/20W |
| RW07 | 24011562 | Res,Chip | 5.6K J 1/20W | RW85 | 24011104 | Res,Chip | 100K | J 1/20W |
| RW08 | 24011102 | Res,Chip | 1K J 1/20W | RW86 | 70424075 | Res,Chip | 0 | |
| RW09 | 24011332 | Res,Chip | 3.3K J 1/20W | RW87 | 70424076 | Res,Chip | 0 | |
| RW10 | 24011382 | Res,Chip | 3.9K J 1/20W | RW89 | 24011622 | Res,Chip | 6.2K | J 1/20W |
| RW11 | 24011222 | Res,Chip | 2.2K J 1/20W | RW90 | 24011202 | Res,Chip | 2K | J 1/20W |
| RW12 | 24011102 | Res,Chip | 1K J 1/20W | RW91 | 24011202 | Res,Chip | 2K | J 1/20W |
| RW13 | 24011222 | Res,Chip | 2.2K J 1/20W | RW92 | 70424075 | Res,Chip | 0 | |
| RW14 | 24011222 | Res,Chip | 2.2K J 1/20W | RW93 | 70424076 | Res,Chip | 0 | |
| RW15 | 24011102 | Res,Chip | 1K J 1/20W | | | - MISCELLANEOUS - | | |
| RW16 | 24011222 | Res,Chip | 2.2K J 1/20W | PV01 | 23801606 | Socket,18P | | |
| RW17 | 24011751 | Res,Chip | 750 J 1/20W | PV02 | 23801608 | Socket,14P | | |
| RW18 | 24011103 | Res,Chip | 10K J 1/20W | PV03 | 23397481 | Plug,4P | | |
| RW19 | 24011102 | Res,Chip | 1K J 1/20W | PV04 | 23397481 | Plug,4P | | |
| RW20 | 24011184 | Res,Chip | 180K J 1/20W | ZV01 | 70132269 | Trap,5.3MHz | | |
| RW21 | 24011152 | Res,Chip | 1.5K J 1/20W | ZV02 | 70132288 | LPF | | |
| RW22 | 24011243 | Res,Chip | 24K J 1/20W | ZV03 | 70132283 | LPF | | |
| RW23 | 24011102 | Res,Chip | 1K J 1/20W | ZV04 | 70132287 | Filter | | |
| RW24 | 24011103 | Res,Chip | 10K J 1/20W | ZV05 | 70132285 | BPF,5.3MHz | | |
| RW25 | 24011243 | Res,Chip | 24K J 1/20W | ZV06 | 70132285 | LPF | | |
| RW26 | 24011182 | Res,Chip | 1.8K J 1/20W | ZV07 | 70132284 | Filter | | |
| RW27 | 24011751 | Res,Chip | 750 J 1/20W | ZV08 | 70132282 | Filter | | |
| RW28 | 24011821 | Res,Chip | 820 J 1/20W | ZV09 | 70132282 | Filter | | |
| RW29 | 24011184 | Res,Chip | 180K J 1/20W | | | | | |
| RW30 | 24011152 | Res,Chip | 1.5K J 1/20W | U101 | 70611348 | P C Board Assy,Main | | |
| RW31 | 24011123 | Res,Chip | 12K J 1/20W | U102 | 70611342 | P C Board Assy,PWM CONTROL | | |
| RW32 | 24011821 | Res,Chip | 820 J 1/20W | U103 | 70611343 | P C Board Assy,RV Control | | |
| RW33 | 24011102 | Res,Chip | 1K J 1/20W | | | - INTEGRATED CIRCUITS - | | |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|
| IC1 | 70611325 | IC | UPC78L05J | |
| IC2 | 70611329 | IC | UPC358C | |
| IC5I | 70611331 | IC | MS1977F | |
| IC71 | 70119272 | IC | UPC393G | |
| IC72 | 70611333 | Diode,Zener | MA3047 | |
| | | - TRANSISTORS - | | |
| ⚠Q1 | 70611326 | Transistor.FET | 2SK203 | |
| Q2 | A5012020 | Transistor | RN2202 | |
| Q3 | A6002040 | Transistor | RN1204 | |
| Q4 | 70611353 | Transistor | UM421D | |
| Q5 | A5012040 | Transistor | RN2204 | |
| Q71 | 70611345 | Transistor | UN2210 | |
| | | - DIODES - | | |
| ⚠D1 | 70611317 | Diode | S1WBA60 | |
| D10 | 70611321 | Diode | MA165 | |
| D2 | 70611318 | Diode | ERA22-06 | |
| D3 | 70611319 | Diode | ERA15-01 | |
| D4 | 70611320 | Diode | ERA22-02 | |
| D5 | 70611321 | Diode | MA165 | |
| ⚠D6 | 70611322 | Diode | ERC90W02 | |
| D7 | 70611323 | Diode | ERB81-004 | |
| D71 | 70611336 | Diode | MA-151WK | |
| D72 | 70611336 | Diode | MA-151WK | |
| D73 | 70611336 | Diode | MA-151WK | |
| D8 | 70611324 | Diode | MA175WA | |
| D9 | 70611324 | Diode | MA175WA | |
| | | - COILS - | | |
| ⚠L1 | 70620312 | Coil,Choke | SU10H3200 | |
| L2 | 70620313 | Coil,Choke | K2F1A-0043 | |
| ⚠L3 | 70620316 | Coil,Choke | 55D-H-1401 | |
| LED1 | 70611327 | Diode,LED | | |
| LED2 | 70611327 | Diode,LED | | |
| | | - CAPACITORS - | | |
| ⚠C1 | 70640378 | Cap,Electrolytic | 0.047F | M AC250 |
| C10 | 24635331 | Cap,Electrolytic | 330MF | M 35V |
| C11 | 24639019 | Cap,Electrolytic | 1MF | M 50V |
| C12 | 70640383 | Cap,Ceramic | 47PF | 1KV |
| C13 | 70640384 | Cap,Ceramic | 2200PF | 500V |
| C21 | 70640385 | Cap,Ceramic | 470MF | 25V |
| C22 | 70640385 | Cap,Ceramic | 470MF | 25V |
| C23 | 70640385 | Cap,Ceramic | 470MF | 25V |
| C24 | 24755221 | Cap,Electrolytic | 220MF | M 25V |
| C25 | 24632100 | Cap,Electrolytic | 10MF | M 16V |
| C26 | 24632101 | Cap,Electrolytic | 100MF | M 10V |
| C29 | 70640385 | Cap,Electrolytic | 33MF | M 10V |
| C30 | 70640387 | Cap,Electrolytic | 0.1MF | M 50V |
| C31 | 70640387 | Cap,Electrolytic | 0.1MF | M 50V |
| ⚠C4 | 70640379 | Capristor,1000P/1.5M | | |
| ⚠C5 | 24094656 | Cap,Ceramic | 220DPF | M 400V |
| C51 | 24094780 | Cap,Chip | 0.1MF | Z 25V |
| C52 | 24054760 | Cap,Chip | 0.1MF | Z 25V |
| C53 | 24054780 | Cap,Chip | 0.1MF | Z 25V |
| C54 | 24761391 | Cap,Chip | 2200PF | J 50V |
| C55 | 24761471 | Cap,Chip | 470PF | J 50V |
| C56 | 70640396 | Cap,Ceramic | 0.1MF | 50V |
| ⚠C7 | 70640351 | Cap,Electrolytic | 47MF | M 400V |
| C8 | 70640382 | Cap,Electrolytic | 0.47MF | M 400V |
| C9 | 24635220 | Cap,Electrolytic | 22MF | M 35V |
| | | - RESISTORS - | | |
| R1 | 24366683 | Res,Carbon | 68K | G 1/6W |
| R10 | 24366820 | Res,Carbon | 82 | J 1/6W |
| R11 | 24365184 | Res,Carbon | 180K | J 1/6W |
| R12 | 24365154 | Res,Carbon | 150K | J 1/6W |
| R13 | 24376101 | Res,Carbon | 100 | J 1/2W |
| R2 | 24366683 | Res,Carbon | 68K | G 1/6W |
| R21 | 70640395 | Res | 0.1 | 1W |
| R22 | 24366683 | Res,Carbon | 68K | G 1/6W |
| R23 | 24366362 | Res,Carbon | 3.9K | J 1/6W |
| R24 | 24366101 | Res,Carbon | 100 | J 1/6W |
| R25 | 24366362 | Res,Carbon | 3.9K | J 1/6W |
| R26 | 24366222 | Res,Carbon | 2.2K | J 1/6W |
| R27 | 24365102 | Res,Carbon | 1K | J 1/6W |
| R28 | 24365301 | Res,Carbon | 300 | J 1/6W |
| R29 | 24361105 | Res,Carbon | 1M | J 1/6W |
| R3 | 24366683 | Res,Carbon | 68K | G 1/6W |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|
| R30 | 24366474 | Res,Carbon | 470K | J 1/6W |
| R31 | 24365332 | Res,Carbon | 33K | J 1/6W |
| R32 | 24366223 | Res,Carbon | 22K | J 1/6W |
| R33 | 24366153 | Res,Carbon | 15K | J 1/6W |
| R34 | 24365332 | Res,Carbon | 3.3K | J 1/6W |
| R35 | 24366562 | Res,Carbon | 5.6K | J 1/6W |
| R36 | 24366152 | Res,Carbon | 1.5K | J 1/6W |
| R37 | 24366102 | Res,Carbon | 1K | J 1/6W |
| R38 | 24366222 | Res,Carbon | 2.2K | J 1/6W |
| R39 | 24366222 | Res,Carbon | 2.2K | J 1/6W |
| R4 | 24366683 | Res,Carbon | 68K | G 1/6W |
| R5 | 70640363 | Res | 68K | 2W |
| R51 | 24872182 | Res,Chip | 1K | J 1/16W |
| R52 | 24872473 | Res,Chip | 47K | J 1/16W |
| R53 | 24872223 | Res,Chip | 22K | J 1/16W |
| R54 | 24872183 | Res,Chip | 18K | J 1/16W |
| R55 | 24872163 | Res,Chip | 16K | J 1/16W |
| R56 | 24872474 | Res,Chip | 470K | J 1/16W |
| R6 | 24366100 | Res,Carbon | 10 | J 1/6W |
| R7 | 24366190 | Res,Carbon | 10 | J 1/6W |
| R71 | 24872471 | Res,Chip | 470 | J 1/16W |
| R72 | 24872221 | Res,Chip | 220 | J 1/16W |
| R73 | 24872102 | Res,Chip | 1K | J 1/16W |
| R74 | 24872681 | Res,Chip | 680 | J 1/16W |
| R75 | 24872472 | Res,Chip | 4.7K | J 1/16W |
| R76 | 24872471 | Res,Chip | 470 | J 1/16W |
| R77 | 24872683 | Res,Chip | 68K | J 1/16W |
| R78 | 24872102 | Res,Chip | 1K | J 1/16W |
| R79 | 24872102 | Res,Chip | 1K | J 1/16W |
| R8 | 70640394 | Res | 0.36 | 1/2W |
| R80 | 24872103 | Res,Chip | 10K | J 1/16W |
| R81 | 24872103 | Res,Chip | 10K | J 1/16W |
| R82 | 24872103 | Res,Chip | 10K | J 1/16W |
| R9 | 70640394 | Res | 0.36 | 1/2W |
| RA71 | 70640392 | Res,Array,25K/50K | | |
| | | - MISCELLANEOUS - | | |
| ⚠F1 | 70611350 | Fuse,250V,2A | | |
| N101 | 70611348 | Glass Tube | | |
| P101 | 70611347 | Fuse Holder | | |
| P102 | 70611347 | Fuse Holder | | |
| ⚠PHC1 | 70611328 | Photo Coupler,TLP521-1GR | | |
| S1 | 70611334 | Switch | | |
| S2 | 70611335 | Switch | | |
| T0 | 70611340 | Terminal | | |
| ⚠T1 | 70620314 | Power Transformer,ETS22K850A | | |
| VR1 | 70640388 | Res,Variable | 50Ω | |
| VR2 | 70640389 | Res,Variable | 100K | |
| ZD1 | 70611330 | Diode,Zener | MA4200 | |
| ZD2 | 70611330 | Diode,Zener | MA4200 | |
| ZD51 | 70611332 | Diode,Zener | MA3000 | |
| ZD52 | 70611333 | Diode,Zener | MA3047 | |
| ZD71 | 70611333 | Diode,Zener | MA3047 | |
| ■ UD01 | 70695098 | P C Board Assy,Main | | |
| | | - IMEGRATED CIRCUITS - | | |
| IC1 | 70611665 | IC | | KH-IX0043AE |
| IC2 | 70611666 | IC | | TA7357P |
| IC3 | 70611667 | IC | | HD14013P |
| IC4 | 70611667 | IC | | HD14013P |
| IC5 | 70611668 | IC | | HD14069P |
| IC6 | 70611669 | IC | | NJM4558D |
| IC7 | 70611670 | IC | | TA78L015 |
| | | - TRANSISTORS - | | |
| Q1 | 70611664 | Transistor | | 2SC1815-Y |
| | | - DIODES - | | |
| D1 | 70611661 | Diode | | RH-DX0142CE |
| D2 | 70611661 | Diode | | RH-DX0142CE |
| D3 | 70611661 | Diode | | RH-DX0142CE |
| D4 | 70611661 | Diode | | RH-DX0142CE |
| D5 | 70611661 | Diode | | RH-DX0142CE |
| D7 | 70611663 | Diode,FED | | RH-PX0233AE |
| | | - COILS - | | |
| L1 | 70620353 | Coil | | RCILP0044E |
| | | - CAPACITORS - | | |
| C1 | 70640368 | Cap,Ceramic | | 0.01MF |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | | | LOCATION NUMBER | PART NUMBER | DESCRIPTION | | |
|---|---|---|---|---|---|---|---|---|---|
| C10 | 24436471 | Cap.Ceramic | 470PF | J 50V | A100A | 70391421 | Screw,2x5mm | | |
| C11 | 70640557 | Cap.Plastic | 0.047MF | K | A100B | 70391378 | Screw,2x3mm | | |
| C12 | 24436471 | Cap.Ceramic | 470PF | J 50V | A102 | 70881288 | Button | | |
| C13 | 24203100 | Cap.Electrolytic | 10MF | M 16V | A104A | 70391276 | Screw,2x5mm | | |
| C14 | 70640565 | Cap.Plastic | 1200PF | K | A105 | 70886409 | Bracket | | |
| C15 | 70640565 | Cap.Plastic | 1200PF | K | A105A | 70391276 | Screw,2x5mm | | |
| C16 | 24212122 | Cap.Ceramic | 1200PF | K 50V | A106 | 70886410 | Bracket | | |
| C17 | 24203100 | Cap.Electrolytic | 10MF | M 16V | A106A | 70391276 | Screw,2x5mm | | |
| C18 | 24065872 | Cap.Electrolytic | 2.2MF | M 50V | A107 | 70842464 | Bracket | | |
| C19 | 24065972 | Cap.Electrolytic | 2.2MF | M 50V | A107A | 70391451 | Screw,2x5mm | | |
| C2 | 24798220 | Cap.Electrolytic | 22MF | M 35V | A120 | 70818117 | Grip | | |
| C20 | 24353330 | Cap.Ceramic | 33PF | J 50V | A120A | 70391272 | Screw,2x5mm | | |
| C21 | 24533330 | Cap.Ceramic | 33PF | J 50V | A122 | 70881290 | Button | | |
| C22 | 24232103 | Cap.Ceramic | 0.01MF | Z 50V | A124 | 70944413 | Label | | |
| C23 | 24436470 | Cap.Ceramic | 47PF | J 50V | A130 | 70902914 | Belt Assy | | |
| C24 | 24212092 | Cap.Ceramic | 3900PF | K 50V | A130A | 70391351 | Screw,2.6x8mm | | |
| C26 | 70640564 | Cap.Axial | 2200PF | K | A130B | 70395237 | Washer | | |
| C27 | 70940566 | Cap.Plastic | 3900PF | K | A140 | 70869066 | Cover,Grip | | |
| C3 | 24795330 | Cap.Electrolytic | 33MF | M 25V | A150A | 70391421 | Screw,2x5mm | | |
| C4 | 24795330 | Cap.Electrolytic | 33MF | M 25V | A150A | 70391421 | Screw,2x5mm | | |
| C5 | 24206479 | Cap.Electrolytic | 4.7MF | M 50V | A170 | 70869075 | Cover,Mic | | |
| C6 | 24795330 | Cap.Electrolytic | 33MF | M 25V | A170A | 70391421 | Screw,2x5mm | | |
| C7 | 24203100 | Cap.Electrolytic | 10MF | M 16V | A171 | 70154027 | Microphone Unit | | |
| C8 | 24212122 | Cap.Ceramic | 1200PF | K 50V | A180 | 70674117 | Label | | |
| C9 | 24591104 | Cap.Plastic | 0.1MF | J 50V | A190 | 70944417 | Label | | |
| | | - RESISTORS - | | | A200 | 70813203 | Panel Left | | |
| R1 | 24376391 | Res.Carbon | 390 | J 1/2W | A200A | 70391276 | Screw,2x5mm | | |
| R10 | 24366183 | Res.Carbon | 18K | J 1/6W | A200B | 70391421 | Screw,2x5mm | | |
| R11 | 24366582 | Res.Carbon | 6.8K | J 1/6W | A200C | 70391451 | Screw,2x5mm | | |
| R12 | 24366103 | Res.Carbon | 10K | J 1/6W | A202A | 70391457 | Screw,1.7x3.5mm | | |
| R13 | 24366183 | Res.Carbon | 18K | J 1/6W | A204 | 70850078 | Spring | | |
| R14 | 24366103 | Res.Carbon | 10K | J 1/6W | A205 | 70881301 | Knob | | |
| R15 | 24366473 | Res.Carbon | 47K | J 1/6W | A206 | 70881302 | Button | | |
| R16 | 24366473 | Res.Carbon | 47K | J 1/6W | A207 | 70662781 | Slider | | |
| R17 | 24366124 | Res.Carbon | 120K | J 1/6W | A207A | 70396049 | Washer | | |
| R18 | 24366124 | Res.Carbon | 120K | J 1/6W | A208 | 70851755 | Spring | | |
| R19 | 24366124 | Res.Carbon | 120K | J 1/6W | A209 | 70851750 | Spring | | |
| R2 | 24376391 | Res.Carbon | 390 | J 1/2W | A240 | 70881292 | Button | | |
| R20 | 24366391 | Res.Carbon | 390 | J 1/6W | A250 | 70858156 | Door | | |
| R21 | 24366473 | Res.Carbon | 47K | J 1/6W | A252 | 70826432 | Plate,Bottom | | |
| R22 | 24366473 | Res.Carbon | 47K | J 1/6W | A253 | 70351754 | Spring | | |
| R23 | 24366124 | Res.Carbon | 120K | J 1/6W | A260 | 70881300 | Button | | |
| R24 | 24366124 | Res.Carbon | 120K | J 1/6W | A260 | 70350076 | Spring | | |
| R25 | 24366124 | Res.Carbon | 120K | J 1/6W | A290 | 70852780 | Door Holder | | |
| R26 | 24366391 | Res.Carbon | 390 | J 1/6W | A290A | 70391351 | Screw,2.6x8mm | | |
| R27 | 24366472 | Res.Carbon | 4.7K | J 1/6W | A300 | 70817151 | Cover,Back | | |
| R28 | 24366221 | Res.Carbon | 220 | J 1/6W | A300A | 70391421 | Screw,2x5mm | | |
| R29 | 24366560 | Res.Carbon | 56 | J 1/6W | A304 | 70881295 | Button | | |
| R3 | 24366750 | Res.Carbon | 75 | J 1/6W | A310 | 70881547 | Knob | | |
| R30 | 24366272 | Res.Carbon | 2.7K | J 1/6W | A311 | 70881548 | Knob | | |
| R31 | 24366102 | Res.Carbon | 1K | J 1/6W | A320 | 70881294 | Knob | | |
| R4 | 24366391 | Res.Carbon | 330 | J 1/6W | A400 | 70819116 | Cassette Cover | | |
| R5 | 24366124 | Res.Carbon | 120K | J 1/6W | A400A | 70391567 | Screw,2x5mm | | |
| R6 | 24366474 | Res.Carbon | 470K | J 1/6W | A500 | 70862903 | Cover,Tally | | |
| R7 | 24366123 | Res.Carbon | 12K | J 1/6W | A510 | 70812903 | Front Panel | | |
| R8 | 24366823 | Res.Carbon | 82K | J 1/6W | A510A | 70391278 | Screw,2x5mm | | |
| R9 | 24366472 | Res.Carbon | 4.7K | J 1/6W | A520 | 70825081 | Plate,Bottom | | |
| | | - MISCELLANEOUS - | | | A520A | 70391421 | Screw,2x5mm | | |
| ⚠F1 | 70611871 | Fuse | | | A520B | 70391421 | Screw,2x5mm | | |
| FB1 | 70611882 | Coil,Ferite | RBLN-0043CEZZ | | A521 | 70835278 | Terminal | | |
| JK1 | 70611875 | Jack | | | A522 | 70835282 | Terminal | | |
| JK2 | 70611876 | Jack | | | A530 | 70852788 | Battery Cover | | |
| JK3 | 70611876 | Jack | | | A540 | 70842467 | Bracket | | |
| JK4 | 70611877 | Jack | | | A540A | 70391451 | Screw,2x5mm | | |
| JK5 | 70611875 | Jack | | | A540B | 70391452 | Screw,2x5mm | | |
| ⚠SW1 | 70611878 | Switch Push,QSW-P0017AE | | | A550 | 70352165 | Spring | | |
| SW2 | 70611879 | Switch Slide,QSW-S0095AE | | | A560 | 70851295 | Knob | | |
| X1 | 70611881 | Resonator | | | A600 | 70391466 | Screw,2x7mm | | |
| ZD1 | 70611862 | Diode,Zener | RH-EXD134GE | | A702 | 70917949 | Case | | |
| ZD2 | 70611863 | Diode,Zener | RH-EXD168GE | | A703 | 70921354 | Packing(U) | | |
| | | | | | A704 | 70921355 | Packing(L) | | |
| | | | | | A705 | 70933157 | Cover | | |
| | | MECHANICAL PARTS | | | A710 | 70921356 | Packing | | |
| | | | | | 1 | 70676133 | Tension Servo Assy | YQ40389A-1 | B001 |
| A100 | 70813202 | Panel Right | | | 3 | 70673978 | Cap | YQ40059 | B003 |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | |
|---|---|---|---|
| 4 | 70678134 | Guide Rail Assy | Y040387A B004 |
| 5 | 70673945 | Screw | SPSH1725M B005 |
| 6 | 70678135 | FE Head Arm | Y020053-1-2 B006 |
| 7 | 70677202 | Full Erase Head | Y040441 B007 |
| 8 | 70673952 | Screw | SPSK2025M B008 |
| 9 | 70678135 | Torsion Spring | Y040391 B009 |
| 10 | 70673981 | Flange | Y040063 B010 |
| 11 | 70678026 | Collar | B011 |
| 12 | 70678137 | Collar | Y040498 B012 |
| 13 | 70678138 | Impedance Roller | Y040497 B013 |
| 14 | 70673938 | NUT | PQ42708 B014 |
| 15 | 70678139 | UV Base Assy | Y040056A-4 B015 |
| 16 | 70673946 | Screw | B016 |
| 17 | 70678140 | Sub Deck Assy | Y040343A-2 B017 |
| 18 | 70678027 | Damper | B018 |
| 19 | 70677203 | Audio/Control Head | Y040232 B019 |
| 20 | 70678141 | X Plate | Y040353 B020 |
| 21 | 70678142 | Head Spring | Y040354 B021 |
| 22 | 70672548 | SCREW | B022 |
| 23 | 70678143 | Cam Gear | Y020057 B023 |
| 24 | 70677204 | Cam Encoder | Y040233 B024 |
| 25 | 70678144 | Arm Gear Assy | Y040356A-1 B025 |
| 26 | 70678145 | Lock Arm 1 | B026 |
| 27 | 70678146 | Lock Arm 2 | B027 |
| 28 | 70678147 | Tension Spring | Y040342 B028 |
| 29 | 70678148 | Tension Spring | Y040362 B029 |
| 30 | 70673715 | SLIT WASHER | B030 |
| 31 | 70673945 | Screw | SPSH1725M B031 |
| 32 | 70678149 | Middle Pole Assy | B032 |
| 33 | 70678150 | Torsion Spring | B033 |
| 34 | 70678151 | Slit Washer | B034 |
| 35 | 70678152 | Loading Guide | B035 |
| 36 | 70677205 | Loading Motor | Y040258G B036 |
| 37 | 70673939 | Worm Assy | Y040103A B037 |
| 38 | 70678153 | Loading Motor Bracket Assy | B038 |
| 39 | 70678154 | Brackt | B039 |
| 40 | 70678061 | Worm Wheel Gear | B040 |
| 41 | 70673945 | SCREW | B041 |
| 42 | 70673946 | Screw | B042 |
| 43 | 70678062 | Terminal Gear | B043 |
| 44 | 70673939 | Slit Washer | PQM30017-27 B044 |
| 45 | 70678112 | Loading Ring Assy (Supply) | B045 |
| 46 | 70678063 | Loading Ring Assy (Take-Up) | B046 |
| 47 | 70678155 | Loading Gear 1 | B047 |
| 48 | 70678035 | Loading Gear (2) | B048 |
| 49 | 70678036 | Ring Guide Gear (Supply) | B049 |
| 50 | 70678067 | Ring Guide Gear (Take-Up) | B050 |
| 51 | 70673945 | Screw | B051 |
| 52 | 70678065 | Ring Guide (1) | B052 |
| 53 | 70678069 | Ring Guide (2) | B053 |
| 54 | 70678070 | Ring Guide (3) | B054 |
| 55 | 70673945 | Screw | SPSH1725M B055 |
| 56 | 70678156 | Capstan Motor Assy | Y040235V B056 |
| 57 | 70673945 | Screw | SPSH1725M B057 |
| 58 | 70678025 | Belt | B058 |
| 59 | 70678157 | Capstan Motor Cover | B059 |
| 60 | 70673706 | SCREW | B060 |
| 61 | 70678158 | Pinch Roller Arm Assy | B061 |
| 62 | 70673954 | E-RING | B062 |
| 63 | 70678159 | Spring | B063 |
| 64 | 70678160 | Spring | B064 |
| 65 | 70678161 | Supply Bracket Assy | B065 |
| 66 | 70678162 | Spring | B066 |
| 67 | 70678163 | Search Brake Lever Assy | B067 |
| 68 | 70678028 | Center Pully Bracket Assy | B068 |
| 69 | 70673945 | Screw | SPSH1725M B069 |
| 70 | 70678164 | Take-Up Gear | B070 |
| 71 | 70678165 | Supply Reel Disc Assy | B071 |
| 72 | 70678166 | Take-Up Clutch Assy | B072 |
| 73 | 70673940 | Washer | QD3093-035 B073 |
| 74 | 70677207 | Dew Sensor | Y040234 B074 |
| 75 | 70673945 | Screw | SPSH1725M B075 |
| 76 | 70678166 | Supply Pole Base Assy | B076 |
| 77 | 70678167 | Take-Up Pole Base Assy | B077 |
| 78 | 70677208 | Sensor Unit | B078 |
| 79 | | | |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION | |
|---|---|---|---|
| 101 | 70678168 | Brush | B081 |
| 102 | 70673946 | Screw | B082 |
| 103 | 70678169 | Supply B Reel Assy | B083 |
| 104 | 70678170 | Main Brake Assy (Supply) | B084 |
| 105 | 70678171 | Main Brake Assy (Take-Up) | B085 |
| 106 | 70678172 | Spring | B086 |
| 107 | 70678173 | Spring | B087 |
| 108 | 70678174 | SCREW | B088 |
| 109 | 70673945 | Screw | SPSH1725M B089 |
| 110 | 70678022 | Spring | B090 |
| 111 | 70678175 | Adjust Plate | B091 |
| 112 | 70678023 | Spring | B092 |
| 113 | 70678176 | Pole Base Guide | B093 |
| 114 | 70673946 | Screw | B094 |
| 115 | 70678176 | Middle Pole Stopper | B095 |
| 116 | 70673706 | SCREW | B096 |
| 117 | 70673950 | Screw | SPSK1780M B097 |
| 118 | 70678177 | Lock Arm 3 Assy | B098 |
| 119 | 70678178 | Cylinder Assy | B099 |
| 120 | 70678180 | Upper Cylinder Assy | B101 |
| 121 | 70677210 | Lower Cylinder Motor Assy | B102 |
| 122 | 70678182 | Screw | PQ41535-4 B104 |
| 123 | 70678183 | Screw | SPSH1750M B105 |
| 124 | 70678184 | Shield Cover | Y040259 B106 |
| 125 | 70673946 | Screw | B107 |
| 126 | 70678185 | End Sensor Bracket | YQ30113 B108 |
| 127 | 70678186 | PHOTO TRANSISTOR | B109 |
| 128 | 70678183 | Screw | |
| 129 | 70678184 | Shield Cover | Y040259 |
| 130 | 70673946 | Screw | |
| 131 | 70678185 | End Sensor Bracket | YQ30113 |
| 132 | 70678186 | PHOTO TRANSISTOR | |
| 133 | 70671956 | LED Board | YB40C01 |
| B110 | 70670387 | Diode | SIM-205T |
| B111 | 70677056 | Diode | SIM-205T |
| B201 | 70678186 | Cassette Housing Assy | |
| B601A | 70391421 | Screw, 2x5mm | |
| B601B | 70391275 | Screw, 2x6mm | |
| B610A | 70391252 | Screw, 1.7x6mm | |
| B660 | 70153152 | Filter | |
| B680A | 70391421 | Screw, 2x5mm | |
| B690B | 70391421 | Screw, 2x5mm | |
| B691A | 70391422 | Screw, 2x4mm | |
| B694A | 70391422 | Screw, 2x4mm | |
| B694B | 70391351 | Screw, 2.6x8mm | |
| D1 | 70677056 | Diode | SIM-205T |
| G003A | 70361283 | Spacer | |
| G003A | 70391351 | Screw, 2.6x8mm | |
| G003B | 70391312 | Screw, 1.7x4mm | |
| H001 | 70137138 | DC-DC Converter | |
| H001A | 70391421 | Screw, 2x5mm | |
| Q801 | B0400382 | IC | TCD215C |
| Q901 | B0400382 | IC | TCD215C |
| S650 | 21145250 | Lever Switch, 1C2P | |
| SP01 | 70650084 | Spacer | |
| SP02 | 70650084 | Spacer | |
| SP03 | 70650084 | Spacer | |
| SP08 | 70660105 | Spacer | |
| U001A | 70391307 | Spacer | |
| U201A | 70391453 | Screw, 1.7x6mm | |
| U201B | 70391278 | Screw, 1.7x3mm | |
| U501A | 70368157 | Spacer | |
| U501B | 70391421 | Screw, 2x5mm | |
| U501C | 70391404 | Screw, 1.7x3mm | |
| U501D | 70391310 | Screw, 1.7x2mm | |
| U601A | 70391378 | Screw, 2x3mm | |
| US01A | 70391421 | Screw, 2x5mm | |
| US02 | 70163125 | Mic Jack Assy | |
| US02A | 70391421 | Screw, 2x5mm | |
| US04A | 70391399 | Screw, 2.6x5mm | |
| US05A | 70291299 | Screw, 2.6x5mm | |
| UY01A | 70391421 | Screw, 2x5mm | |
| W001 | 70160930 | Wire | |
| W002 | 70160931 | Wire | |
| W010A | 70391350 | Screw, 2x10mm | |
| W012 | 70150994 | Wire | |
| W013 | 70160955 | Wire | |
| W014 | 70160966 | Wire | |
| W034 | 70178013 | Wire | |
| WU01 | 70369158 | Spacer | |
| YD02 | 70676251 | Case | |

| LOCATION NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| Y111 | 70818112 | Pad, Hand |
| Y121 | 70148276 | Remote Control Unit |
| Y122 | 70178005 | Remote Control Connecting Cable |
| Y131 | 70178816 | A/V Cable |
| Y141 | 70861051 | E.V.F. |
| Y141B | 70815178 | Bottom Case |
| Y141C | 70361011 | Lens Assy |
| Y142A | 70352170 | Spring |
| Y142B | 70391458 | Screw, 1.7x3.5mm |
| Y142C | 70880117 | Eye Cap |
| Y143 | 70810135 | Arm Assy |
| Y146C | 70862884 | Spacer |
| Y147A | 70862885 | Bush |
| Y147B | 70866482 | Bracket |
| Y147C | 70391520 | Screw, 2x5mm |
| Y148A | 70852346 | Insulator |
| Y148B | 70391462 | Screw, 1.7x5mm |
| Y148C | 70391463 | Screw, 1.7x10mm |
| Y149A | 70982107 | CRT/DY Assy |
| Y149B | 70862108 | EVF PWB Assy |
| Y149C | 70962109 | VF Cable |
| Y151 | 70101065 | Lithium Battery |
| Y211 | 70871139 | Owners Manual |
| Y211A | 70833020 | Cover |
| Y211E | 70946065 | Sheet |
| Y211F | 70842463 | Sheet |
| Y501A | 70168140 | DC Cable |
| Y702 | 70915056 | Sheet |
| ⚠Y901 | 70695099 | AC Adaptor |
| Y904 | 70866163 | Set Cover |

## AC ADAPTER

| | | |
|---|---|---|
| A101 | 70650512 | Case |
| A102 | 70650513 | Case |
| A103 | 70650489 | Switch Pin |
| A104 | 70650514 | Insulator |
| A105 | 70650491 | Shield Board |
| A107 | 70650511 | Label |
| A108 | 70650489 | Switch Pin |
| A109 | 70650494 | LED Lens |
| A110 | 70650494 | LED Lens |
| A111 | 70650495 | Screw, 2.6x16mm |
| A112 | 70650495 | Screw, 2.6x16mm |
| A113 | 70650515 | Label |
| ⚠W101 | 70611351 | AC Cord |
| Y101 | 70168139 | DC Cable |

## 3D ADAPTER

| | | |
|---|---|---|
| A901 | 70650591 | Case |
| A902 | 70650592 | Case |
| A903 | 70650593 | Plate |
| A904 | 70650594 | Plate |
| A905 | 70650595 | LEG |
| A909 | 70650596 | Button |
| A910 | 70860155 | Label |
| A911 | 70860156 | Label |
| A912 | 70860157 | Label |
| A915 | 70950599 | Screw |

## CASSETTE ADPTER

| | | |
|---|---|---|
| Y602 | 70962103 | Cassette Adaptor, TCA-4U |
| B001 | 70878122 | Bottom Plate Assy |
| B002 | 70878123 | Screw |
| B003 | 70673857 | Screw |
| B004 | 70878124 | Front Lid |
| B005 | 70878125 | Spring |
| B007 | 70878126 | Supply Lever Assy |
| B008 | 70878127 | Miss.Protecter |
| B009 | 70878128 | Spring |
| B010 | 70675356 | Battery Cover |
| B011 | 70675357 | Cassette Door |
| B012 | 70878129 | Spring |
| B013 | 70878130 | Take Up Lever Assy |
| B014 | 70676131 | Roller |
| B015 | 70878132 | Shaft |